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NASA Contractor Report 3221

Calculation of Two-Dimensional Inlet Flow Fields in a Supersonic Free Stream - Program Documentation and Test Cases

S. H. Biringen and O. J. McMillan

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Nielsen Engineering & Research, Inc.
Mountain View, California

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Langley Research Center
under Contract NAS1-15305

National Aeronautics
and Space Administration

Scientific and Technical
Information Office

1980

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1. INTRODUCTION

In this report we present listings of the source listings and a number of test cases to exemplify the use of the computer codes employed to calculate flows about 2-D inlets in a supersonic free stream and to generate computational grids. The program that calculates 2-D inlets flow fields makes use of an implicit algorithm to solve the 2-D time-dependent Euler equations (ref. 1). The mesh generation program (ref. 2) uses the algorithm developed in reference 3 to generate nonorthogonal grids.

Problem formulation, mathematical framework and the overall logic of the programs are presented in a separate report (ref. 4). In the first part of this report we present the input data, specification of initial and boundary conditions, operating instructions and answer listings obtained from the 2-D Euler solver for a drooped-cowl inlet. The test case involves supercritical inlet operation at a subdesign Mach number, M = 2.09. In the second part of this report input data, boundary conditions and answer listings are presented for the mesh generation program. Complete listings of the codes are given in Appendices A and B.

2. THE CODE FOR THE CALCULATION OF 2-D INLET FLOW FIELDS (THE EULER CODE)

In this section we present the input data, specification of initial and boundary conditions and answer listings for the drooped-cowl inlet (fig. 1) for which the design Mach number is

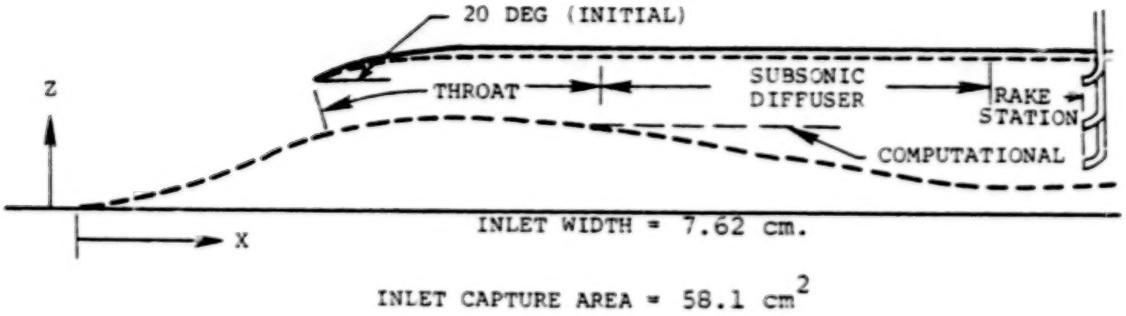

Figure 1.- Isentropic-compression, drooped-cowl inlet configuration.

M_∞ = 3.00. Free stream conditions at M_∞ = 2.09 are prescribed as initial conditions. The incident ramp shock is captured by starting the integration downstream of the ramp leading edge and placing six points on the inflow boundary downstream of the ramp-leading edge shock. Values of flow variables at these locations are found from oblique shock tables (ref. 5). Initialization of flow variables is done in SUB.INITIA.

The sample input data for the 46×22 grid is given in section 2.1. The output listings from the computer program are given in section 2.2 and contour plots (obtained via a library subroutine at NASA/Ames Research Center) are presented in section 2.3.

2.1 Program Use and Operation

In this section we give a detailed description of the input information required to run a typical test case, e.g., calculation of the drooped-cowl inlet. The initial field as well as values of various constants are evaluated in SUB.INITIA. This subroutine also reads the input data except for the last card, which specifies geometry and the type of duct-outflow boundary condition to be used. This last card is read by SUB.BC. We now list the input data cards in order:

Card No.	Format	Variables	
1	8I5	NMAX:	Maximum number of time steps
		JMAX:	Maximum number of points along ξ, where ξ is the coordinate along the body.
		NMAX:	Maximum number of points along η, where η is the coordinate that crosses ξ.
		NP:	Incremental number of time steps after which SUB.MAP is called. The function of SUB.MAP is described in reference 4.
		METH:	Flag for upwind differencing. If METH > 0, program skips upwind differencing.
		IREAD:	Option for grid system. If READ > 0, reads grid from disc (file number 3).
		INVIS:	If INVIS > 0, program accounts for viscous effects; if INVIS = 0, the calculation is inviscid
2	7I5	IREGO:	If IREGO > 0, reads initial field from disc, otherwise starts from free stream conditions.
		ISTORE:	If ISTORE > 0, solution data stored on disc (file number 4).
		JTAIL1:	First ξ-interior point, set to 1.
		JTAIL2:	Last ξ-interior point, set to JMAX-1
		IPLOT:	Index for calling plot routine. If set to zero it skips the plot routine. Otherwise calls the routine at the specified interval.
3	3I5	IUPWIND:	If IUPWIND > 0, skips upwind differencing.
		IOSCIL:	Not relevant to this implementation of this code. Set IOSCIL=0.
		LAMIN:	If LAMIN $\geq$ 0, calculates turbulent viscosity.
4	8F10.0	CNBR:	Courant number; set to about 10 (see ref. 4).

Card No.	Format	Variables	
4		DX:	x-increment used in SUB.GRID. For grid read off the disc set DX=0.
		DY:	y-increment, as above.
		FSMACH:	Free stream Mach number.
		SMU:	Pseudo viscosity coefficient. Set to about 10 times the time step.
		EPS:	Used in SUB.GRID. Here set EPS=0.
		RE:	Reynolds number. In case of inviscid calculation set to about 10^6.
		ALPHA:	Angle of attack.
5		XOSCIL VARA VARB VARC	Not relevant to this implentation of this code. For the inlet calculation set to zero.
6	2I2	LFAC:	If LFAC = 1 outflow is subsonic, otherwise it is supersonic.
		JAXI:	If JAXI = 0 flow is plane 2-D, If JAXI = 1 flow is axisymmetric.

Sample Input for Test Case

```
  500   46   22   10    0    1    0                                        CARD 1
    1    1    0    0    2   45    0                                             2
    1    0   00                                                              3
10.000    .01        .01        2.090      .1000      0.0        100000.  4 0.0
1.0                                                                         5
    0              T F F F F F F F F F F F F F F F F F F F F F T T           6
  1                                                                         7
  1                                                                         8
   1    0    0 T T T T T T T T T T T T T T T T T T T T T T T T T           9
 5 0                                                                        10
```

2.2 Output Listings

```
IMAX,JMAX, KMAX,NP,METH,IMESH,INVIS        10    48    22    10     0     1     0

IREGO,ISTORE,NF,NB,JTAIL1,JTAIL2,IPLOT      1     1     0     0     2    45     1

ILUPWD,IOSCIL,LAMIN        1     0     0

CNBR,FSMACH,SMU,EPS,RE,ALPHA
10.0000000000   2.0000000000    .1000000000   0.0000000000 **************** 0.0000000000

XOSCIL
   .1000000E+01
K=   1
  .17181E+02  .24250E+02  .30072E+02  .41677E+02  .60019E+02  .[illegible]E+03  .21[illegible]E+03  .28577E+02
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MAGNITUDE OF FREE STREAM VELOCITY (QINF) = [illegible]
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Microfilmed From
Best Available Copy

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CHECK ON MASS FLOW AT J=6   .11249E+01       6
RESIDUAL=  .11119E-01
   .9783978E-03   .1429305E-02   .5693[illegible]E-03   .3665162E-02   .9186[illegible]E+01   .111118[illegible]E-01
MASS FLOW RATE, MDOT=  .11645E+01TIME STEP    7
CHECK ON MASS FLOW AT J=6   .112[illegible]E+01       7
RESIDUAL=  .11095E-01
   .9794491E-03   .1431295E-02   .5697[illegible]E-03   .36706[illegible]E-02   .92[illegible]E+01   .110[illegible]E-01
MASS FLOW RATE, MDOT=  .11646E+01TIME STEP    8
CHECK ON MASS FLOW AT J=6   .1124[illegible]E+01       8
RESIDUAL=  .11075E-01
   .9806167E-03   .143355[illegible]E-02   .569[illegible]E-03   .3676[illegible]E-02   .92[illegible]E+01   .110[illegible]78E-01
MASS FLOW RATE, MDOT=  .11647E+01TIME STEP    9
CHECK ON MASS FLOW AT J=6   .11[illegible]E+01       9
RESIDUAL=  .110[illegible]E-01
   .981[illegible]E-03   .1435[illegible]E-02   .569[illegible]E-03   .36[illegible]E-02   .92[illegible]E+01   .110[illegible]E-01
MASS FLOW RATE, MDOT=  .1164[illegible]E+01TIME STEP   10
CHECK ON MASS FLOW AT J=6   .1125[illegible]E+01      10
RESIDUAL=  .1103[illegible]E-01
   .983063[illegible]E-03   .14586[illegible]E-02   .569[illegible]E-03   .36[illegible]E-02   .9[illegible]E+01   .110[illegible]E-01
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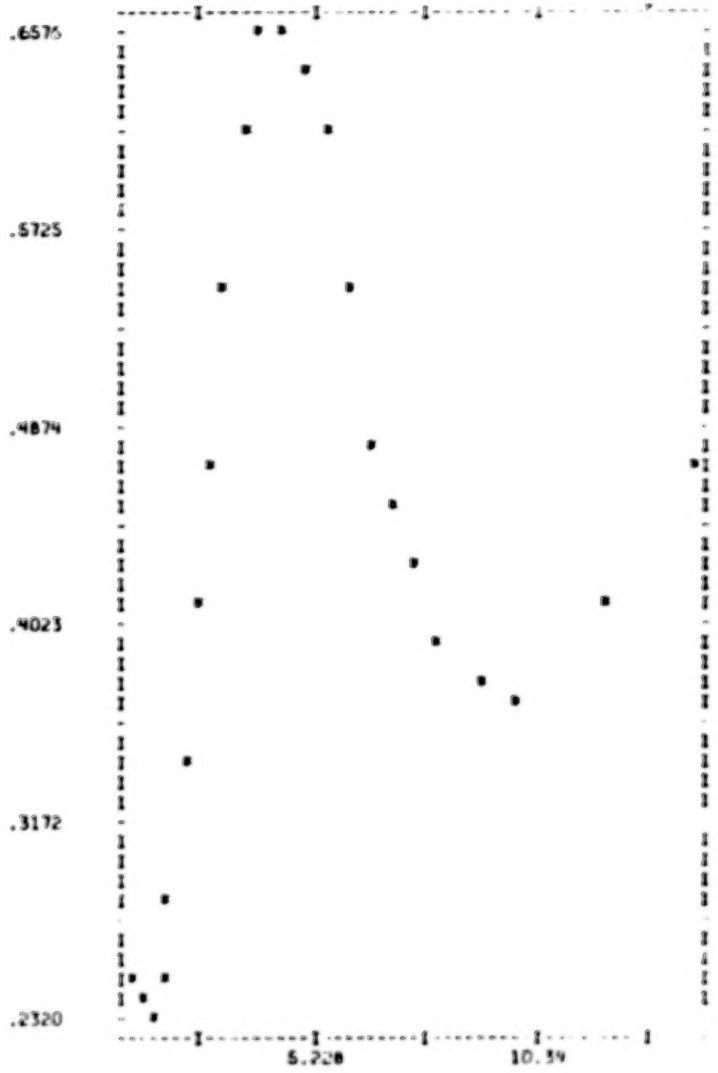
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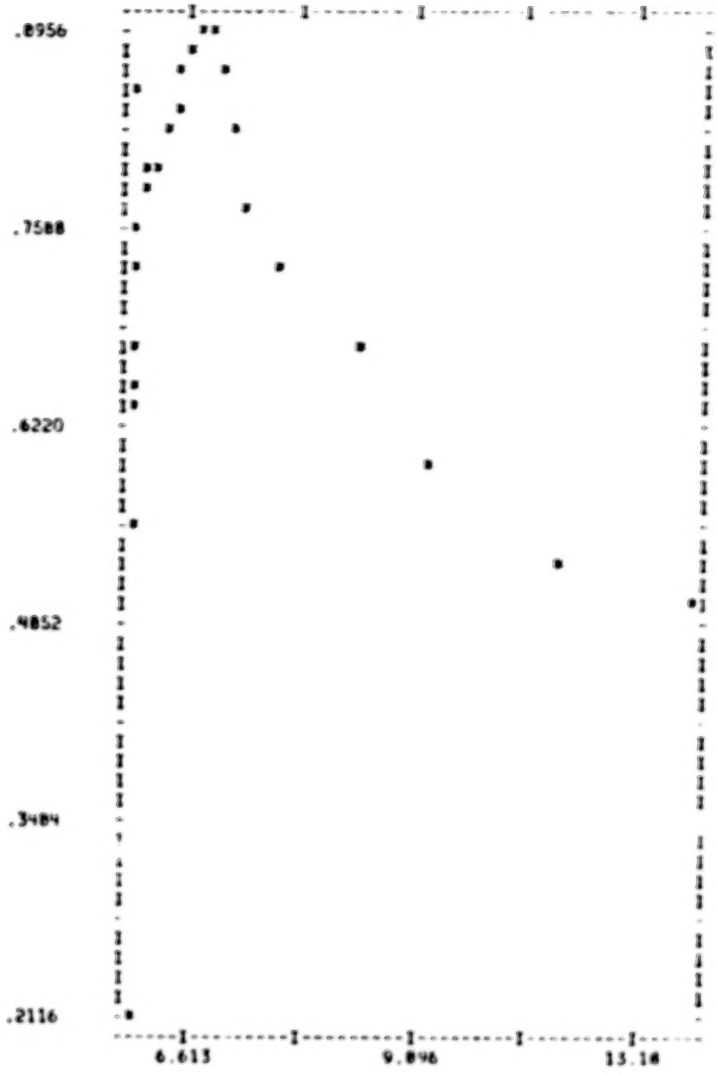

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ITER= 1 TIME= .0767 DT= .0077
MAX. TOTAL ENTHALPY ERR.= 58.66% AT FIRST INDEX= 28. SECOND INDEX= 1. R.M.S. OF TOT. ENTH. ERR. OVER ENTIRE FIELD= 3.95%.

SECOND INDEX= 1

IST	P/PINF	RHO/RINF	U/QINF	V/QINF	[illegible]	[illegible]	[illegible]	MACH	ENTRH/QINF	VORT/QINF	CP
1	.2508E+01	.1878E+01	.8022E+00	0.	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	-.9884E-14	.4933E+00
2	.2508E+01	.1879E+01	.8022E+00	0.	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	0.	.4933E+00
3	.2617E+01	.1935E+01	.7987E+00	0.	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	0.	.5098E+00
4	.2627E+01	.2041E+01	.7917E+00	0.	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	0.	.5134E+00
5	.3059E+01	.2154E+01	.7749E+00	.1[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	.7753E+00	0.	.6753E+00

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6	.3241E+01	.2293E+01	.7544E+00	.5[illegible]E-01	.2140E+01	.1096[illegible]+01	.1[illegible]+01	.1319E+01	-.7584E+00	-.9055E-15	.7328E+00
7	.3381E+01	.2314E+01	.7505[illegible]+00	.5[illegible]E-01	.2[illegible]+01	.1[illegible]+01	.1[illegible]+01	.1[illegible]+01	-.7370E+00	-.9050E-15	.7786E+00
8	.3542E+01	.2357E+01	.7211E+00	.1[illegible]E+00	.2[illegible]+01	.1[illegible]+01	.1[illegible]+01	.1[illegible]+01	-.7212E+00	0.	.8314E+00
9	.3644E+01	.2403E+01	.7045[illegible]+00	.1[illegible]E+00	.2394[illegible]+01	.1[illegible]+01	.1[illegible]+01	.1[illegible]+01	-.7119E+00	0.	.8713E+00
10	.3721E+01	.2439E+01	.6931E+00	.1[illegible]+00	.2[illegible]+01	.1[illegible]+01	.1[illegible]+01	.1[illegible]+01	-.7060E+00	.8610E-15	.8969E+00
11	.3734E+01	.2450E+01	.6771[illegible]+00	.1[illegible]+00	.2[illegible]+01	.1[illegible]+01	.1[illegible]+01	.1[illegible]+01	-.6[illegible]+00	.1686E-14	.9[illegible]+00
12	.3726E+01	.2439E+01	.6609[illegible]+00	.1[illegible]+00	.2[illegible]+01	.1[illegible]+01	.1[illegible]+01	.1[illegible]+01	-.6[illegible]+00	.8[illegible]-15	.9[illegible]+00
13	.3701E+01	.2404E+01	.6464[illegible]+00	.1[illegible]+00	.2[illegible]+01	.1[illegible]+01	.1[illegible]+01	.1[illegible]+01	-.6[illegible]+00	0.	.8[illegible]+00
14	.3655E+01	.2361E+01	.6367E+00	.1[illegible]+00	.2[illegible]+01	.1[illegible]+01	.1[illegible]+01	.1[illegible]+01	-.6[illegible]+00	-.8017E-15	.8[illegible]+00
15	.3586E+01	.2429E+01	.6640E+00	.1[illegible]+00	.2[illegible]+01	.1[illegible]+01	.1[illegible]+01	.1[illegible]+01	-.6[illegible]+00	-.7[illegible]E-15	.8[illegible]+00
16	.3511E+01	.2379E+01	.6686[illegible]+00	.1[illegible]+00	.2[illegible]+01	.1[illegible]+01	.1[illegible]+01	.1[illegible]+01	-.6[illegible]+00	-.1576E-14	.8[illegible]+00
17	.3498E+01	.2364E+01	.6671[illegible]+00	.1[illegible]+00	.2[illegible]+01	.1[illegible]+01	.1[illegible]+01	.1[illegible]+01	-.6[illegible]+00	0.	.8[illegible]+00
18	.3492E+01	.2355E+01	.6655[illegible]+00	.1[illegible]+00	.2[illegible]+01	.1[illegible]+01	.1[illegible]+01	.1[illegible]+01	-.6[illegible]+00	0.	.8[illegible]+00
19	.3492E+01	.2357E+01	.6[illegible]+00	.1[illegible]+00	.2[illegible]+01	.1[illegible]+01	.1[illegible]+01	.1[illegible]+01	-.6[illegible]+00	-.1[illegible]E-14	.8[illegible]+00
20	.3487E+01	.2353E+01	.6739[illegible]+00	.1[illegible]+00	.2[illegible]+01	.1[illegible]+01	.1[illegible]+01	.1[illegible]+01	-.6[illegible]+00	.1476E-14	.8[illegible]+00
21	.3333E+01	.2329E+01	.6917E+00	.1[illegible]+00	.2[illegible]+01	.1[illegible]+01	.1[illegible]+01	.1[illegible]+01	-.6[illegible]+00	0.	.8[illegible]+00
22	.3231E+01	.2272E+01	.6735E+00	.1[illegible]+00	.2[illegible]+01	.1[illegible]+01	.1[illegible]+01	.1[illegible]+01	-.6[illegible]+00	-.1625E-14	.8[illegible]+00
23	.3086E+01	.2190E+01	.7[illegible]+00	.1[illegible]+00	.2[illegible]+01	.1[illegible]+01	.1[illegible]+01	.1[illegible]+01	-.6[illegible]+00	0.	.8[illegible]+00
24	.2995E+01	.2134E+01	.8[illegible]+00	.1[illegible]+00	.2[illegible]+01	.1[illegible]+01	.1[illegible]+01	.1[illegible]+01	-.6[illegible]+00	.9[illegible]E-14	.8[illegible]+00
25	.2974E+01	.2116E+01	.7[illegible]+00	.1[illegible]+00	.2[illegible]+01	.1[illegible]+01	.1[illegible]+01	.1[illegible]+01	-.6[illegible]+00	.9[illegible]E-15	.8[illegible]+00
26	.2988E+01	.2124E+01	.7[illegible]+00	.1[illegible]+00	.2[illegible]+01	.1[illegible]+01	.1[illegible]+01	.1[illegible]+01	-.6[illegible]+00	.9[illegible]E-15	.8[illegible]+00
27	.3401E+01	.2[illegible]+01	-.[illegible]+01	-.[illegible]+00	.2[illegible]+01	.1[illegible]+01	.1[illegible]+01	.1[illegible]+01	-.[illegible]+01	-.3[illegible]E-16	.8[illegible]+00
28	.3649E+01	.2159E+01	0.	.7[illegible]+01	.3[illegible]+01	.9[illegible]+01	.1[illegible]+01	.7[illegible]+01	0.	.2[illegible]+00	
29	.2558E+01	.2149E+01	.5[illegible]+00	.2[illegible]+00	.1[illegible]+01	.8[illegible]+01	.8[illegible]+01	.1[illegible]+01	.6[illegible]+00	0.	.5071E+00
30	.2764E+01	.2188E+01	.6535[illegible]+00	.2[illegible]+00	.2[illegible]+01	.9[illegible]+01	.8[illegible]+01	.1[illegible]+01	.6886E+00	0.	.5770E+00
31	.2851E+01	.2[illegible]+01	.7764E+00	.1[illegible]+00	.2[illegible]+01	.9[illegible]+01	.1[illegible]+01	.1[illegible]+01	.8[illegible]E+00	.1597E-14	.6073E+00
32	.2941E+01	.2[illegible]+01	.8[illegible]+00	.1[illegible]+00	.2[illegible]+01	.9[illegible]+01	.1[illegible]+01	.1[illegible]+01	.9178E+00	0.	.6349E+00
33	.3037E+01	.2[illegible]+01	.7[illegible]+00	.1[illegible]+00	.2[illegible]+01	.9[illegible]+01	.1[illegible]+01	.1[illegible]+01	.9[illegible]E+00	.1[illegible]E-14	.6611E+00
34	.3041E+01	.2364E+01	.6[illegible]+00	.2[illegible]+00	.2[illegible]+01	.9[illegible]+01	.9[illegible]+01	.1[illegible]+01	.7[illegible]+00	-.1966E-14	.6[illegible]+00
35	.3215E+01	.2[illegible]+01	.7[illegible]+00	.1[illegible]+00	.2[illegible]+01	.9[illegible]+01	.1[illegible]+01	.1[illegible]+01	.8[illegible]+00	.6[illegible]E-14	.7[illegible]+00
36	.3504E+01	.2[illegible]+01	.7[illegible]+00	.1[illegible]+00	.2[illegible]+01	.9[illegible]+01	.1[illegible]+01	.1[illegible]+01	.8[illegible]+00	0.	.8[illegible]+00
37	.3699E+01	.2[illegible]+01	.7[illegible]+00	.1[illegible]+00	.2[illegible]+01	.9[illegible]+01	.1[illegible]+01	.1[illegible]+01	.8[illegible]+00	0.	.8[illegible]+00
38	.3671E+01	.2[illegible]+01	.7[illegible]+00	.1[illegible]+00	.2[illegible]+01	.9[illegible]+01	.1[illegible]+01	.1[illegible]+01	.8[illegible]+00	-.5[illegible]E-14	.8[illegible]+00
39	.3514E+01	.2[illegible]+01	.8[illegible]+00	.1[illegible]+00	.2[illegible]+01	.9[illegible]+01	.1[illegible]+01	.1[illegible]+01	.8[illegible]+00	0.	.8[illegible]+00
40	.2782E+01	.2133E+01	.8588E+00	.2[illegible]+00	.2[illegible]+01	.9[illegible]+01	.1[illegible]+01	.1[illegible]+01	.8971E+00	.1379E-14	.5877E+00
41	.2307E+01	.1895E+01	.9356[illegible]+00	.2[illegible]+00	.1[illegible]+01	.9[illegible]+01	.1[illegible]+01	.1[illegible]+01	.9078E+00	-.1386E-14	.9279E+00
42	.1908E+01	.1589E+01	.9826E+00	.1[illegible]+00	.1[illegible]+01	.9[illegible]+01	.1[illegible]+01	.1[illegible]+01	.9944E+00	.9165E-14	.9780E+00
43	.1544E+01	.1[illegible]+01	.1009E+01	.1[illegible]+00	.1[illegible]+01	.1[illegible]+01	.1[illegible]+01	.1[illegible]+01	.1019E+01	.2063E-14	.1[illegible]+00
44	.1[illegible]+01	.1[illegible]+01	.1[illegible]+01	.4[illegible]+01	.1[illegible]+01	.1[illegible]+01	.1[illegible]+01	.1[illegible]+01	.2[illegible]+01	-.7101E-15	.1[illegible]+00
45	.1204E+01	.1[illegible]+01	.9994[illegible]+00	.2[illegible]+01	.1[illegible]+01	.1[illegible]+01	.1[illegible]+01	.1[illegible]+01	.5[illegible]+00	.1[illegible]E-13	.6[illegible]+01
46	.1204E+01	.1[illegible]+01	.9994E+00	.2[illegible]+01	.1[illegible]+01	.1[illegible]+01	.1[illegible]+01	.1[illegible]+01	.9951E+00	.3577E-01	.6[illegible]+01

151	[illegible]	X	Y	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
1	.1718E+02	.1[illegible]+02	.3575[illegible]+01	0.	.[illegible]+00	.9[illegible]+01	0.	.[illegible]+01	-.[illegible]+02	.1355[illegible]+01
2	.2923E+02	.1[illegible]+02	.3575[illegible]+01	0.	-.[illegible]+00	-.9[illegible]+01	0.	0.	-.6057E+02	.1355[illegible]+01
3	.3008E+02	.1[illegible]+02	.3575[illegible]+01	0.	-.[illegible]+00	-.9[illegible]+01	0.	0.	-.6019E+02	.1353[illegible]+01
4	.4168E+02	.1[illegible]+02	.3575E+01	0.	-.[illegible]+00	-.2[illegible]+01	0.	0.	-.6253[illegible]+02	.1356[illegible]+01
5	.4001E+02	.9[illegible]+01	.3575[illegible]+01	0.	-.[illegible]+00	-.1[illegible]+01	0.	.1908[illegible]+01	-.6[illegible]E+02	.1[illegible]+01
6	.1031E+03	.8[illegible]+01	.3575[illegible]+01	0.	-.1[illegible]+01	-.1[illegible]+01	0.	.5[illegible]+01	-.7[illegible]+02	.1[illegible]+01
7	.2153[illegible]+03	.7[illegible]+01	.3[illegible]+01	0.	-.2[illegible]+01	-.2[illegible]+01	0.	.1[illegible]+02	-.7[illegible]+02	.1[illegible]+01
8	.3817E+03	.7[illegible]+01	.3[illegible]+01	0.	-.4[illegible]+01	-.4[illegible]+01	0.	.1[illegible]+02	-.7[illegible]+02	.1[illegible]+01
9	.4[illegible]+03	.7[illegible]+01	.3[illegible]+01	0.	-.[illegible]+01	-.[illegible]+01	0.	.1[illegible]+02	-.6[illegible]+02	.1[illegible]+01
10	.4[illegible]+03	.7[illegible]+01	.3[illegible]+01	0.	-.[illegible]+01	-.1[illegible]+01	0.	.1[illegible]+02	-.6[illegible]+02	.1[illegible]+01
11	.5078E+03	.6[illegible]+01	.3[illegible]+01	0.	-.[illegible]+01	-.[illegible]+01	0.	.1[illegible]+02	-.6[illegible]+02	.1[illegible]+01
12	.5[illegible]+03	.6[illegible]+01	.3[illegible]+01	0.	-.7[illegible]+01	-.1[illegible]+01	0.	.1[illegible]+02	-.6[illegible]+02	.1[illegible]+01
13	.5394E+03	.6[illegible]+01	.3[illegible]+01	0.	-.8[illegible]+01	-.3[illegible]+01	0.	.1[illegible]+02	-.6[illegible]+02	.1[illegible]+01
14	.5559E+03	.6[illegible]+01	.3[illegible]+01	0.	-.8[illegible]+01	-.4[illegible]+01	0.	.1[illegible]+02	-.6[illegible]+02	.1[illegible]+01
15	.5697E+03	.6[illegible]+01	.3[illegible]+01	0.	-.[illegible]+01	-.7[illegible]+01	0.	.1[illegible]+02	-.6[illegible]+02	.1[illegible]+01
16	.5653E+03	.6[illegible]+01	.3[illegible]+01	0.	-.[illegible]+01	-.[illegible]+01	0.	.1[illegible]+02	-.6[illegible]+02	.1[illegible]+01
17	.5386E+03	.6[illegible]+01	.3[illegible]+01	0.	-.[illegible]+01	-.1[illegible]+01	0.	.1[illegible]+02	-.6[illegible]+02	.1[illegible]+01
18	.4[illegible]+03	.6[illegible]+01	.3[illegible]+01	0.	-.[illegible]+01	-.1[illegible]+01	0.	.1[illegible]+02	-.6[illegible]+02	.1[illegible]+01
19	.1330E+03	.5[illegible]+01	.3[illegible]+01	0.	-.1[illegible]+01	-.1[illegible]+01	0.	.1[illegible]+02	-.6[illegible]+02	.1[illegible]+01
20	.1917E+03	.1[illegible]+01	.3[illegible]+01	0.	.1[illegible]+01	.[illegible]+01	0.	.1[illegible]+02	-.6[illegible]+02	.1[illegible]+01
21	.3551E+03	.5[illegible]+01	.3[illegible]+01	0.	.[illegible]+01	.[illegible]+01	0.	.1[illegible]+02	-.6[illegible]+02	.1[illegible]+01
22	.4[illegible]+03	.5[illegible]+01	.3[illegible]+01	0.	.[illegible]+01	.[illegible]+01	0.	.1[illegible]+02	-.6[illegible]+02	.1[illegible]+01
23	.4[illegible]+03	.5[illegible]+01	.3[illegible]+01	0.	.6[illegible]+01	.[illegible]+01	0.	.1[illegible]+02	-.6[illegible]+02	.1[illegible]+01
24	.4320E+03	.5[illegible]+01	.3[illegible]+01	0.	.6[illegible]+01	.1[illegible]+01	0.	.1[illegible]+02	-.6[illegible]+02	.1[illegible]+01

25	.4798E+04	.5816E+01	.3063E+01	0.	-.8[illegible]E+02	-.2[illegible]E+02	0.	.1798E+02	-.5278E+02	.1397E+01	
26	.6994E+04	.5808E+01	.3044E+01	0.	-.1[illegible]E+03	.3[illegible]E+01	0.	.1[illegible]E+02	-.5505E+02	.1254E+01	
27	.1150E+05	.5804E+01	.3053E+01	0.	-.1[illegible]E+03	.1[illegible]E+01	0.	[illegible]	-.9205E+02	.1674E+01	
28	.6750E+05	.5779E+01	.3054E+01	0.	.2474E+03	.8[illegible]E+01	0.	.[illegible]E+02	0.	.7703E+00	
29	.8614E+04	.5848E+01	.3060E+01	0.	.9[illegible]E+02	.7[illegible]E+01	0.	-.2934E+02	.6896E+02	.1156E+01	
30	.8219E+04	.5806E+01	.3045E+01	0.	.1[illegible]E+03	.9[illegible]E+01	0.	.2779E+02	.6573E+02	.1267E+01	
31	.6306E+04	.5814E+01	.3064E+01	0.	.8[illegible]E+02	.5[illegible]E+01	0.	-.2955E+02	.6954E+02	.1274E+01	
32	.5175E+04	.5856E+01	.3077E+01	0.	.6[illegible]E+02	.5[illegible]E+01	0.	-.3[illegible]E+02	.7185E+02	.1[illegible]E+01	
33	.5489E+04	.5849E+01	.3078E+01	0.	.7[illegible]E+02	.4[illegible]E+01	0.	-.3[illegible]E+02	.7673E+02	.1[illegible]E+01	
34	.6572E+04	.5858E+01	.3089E+01	0.	.8[illegible]E+02	.[illegible]E+01	0.	-.3911E+02	.9204E+02	.1[illegible]E+01	
35	.3056E+04	.5873E+01	.3[illegible]E+01	0.	.5[illegible]E+02	-.[illegible]E+01	0.	-.4660E+02	.1527E+03	.1564E+01	
36	.1196E+04	.5960E+01	.3[illegible]E+01	0.	.1[illegible]E+02	-.7[illegible]E+01	0.	-.4977E+02	.1[illegible]E+03	.1[illegible]E+01	
37	.1006E+04	.6068E+01	.3[illegible]E+01	0.	.1[illegible]E+02	-.9[illegible]E+01	0	-.4[illegible]E+02	.1[illegible]E+03	.1[illegible]E+01	
38	.8374E+03	.6144E+01	.3[illegible]E+01	0.	.9[illegible]E+01	-.[illegible]E+01	0	-.5[illegible]E+02	.1[illegible]E+03	.1[illegible]E+01	
39	.4774E+03	.6346E+01	.3[illegible]E+01	0.	.5[illegible]E+01	-.[illegible]E+01	0.	-.4[illegible]E+02	.1[illegible]E+03	.1564E+01	
40	.3873E+03	.6448E+01	.3[illegible]E+01	0.	.4[illegible]E+01	-.5[illegible]E+01	0.	-.2[illegible]E+02	.8[illegible]E+02	.1[illegible]E+01	
41	.4455E+03	.6806E+01	.3[illegible]E+01	0.	.5[illegible]E+01	-.[illegible]E+01	0	-.2[illegible]E+02	.8911E+02	.1[illegible]E+01	
42	.3632E+03	.7003E+01	.3[illegible]E+01	0.	.3[illegible]E+01	-.7[illegible]E+01	0.	-.2[illegible]E+02	.1[illegible]E+03	.1[illegible]E+01	
43	.1980E+03	.7504E+01	.3[illegible]E+01	0.	.2[illegible]E+01	-.1[illegible]E+01	0.	-.1[illegible]E+02	.9903E+02	.1[illegible]E+01	
44	.1528E+03	.8038E+01	.3[illegible]E+01	0.	.1[illegible]E+01	-.1[illegible]E+01	0.	-.6[illegible]E+01	.1[illegible]E+03	.1[illegible]E+01	
45	.7548E+02	.9004E+01	.3[illegible]E+01	0.	.8[illegible]E+00	-.5[illegible]E+00	0.	-.1[illegible]E+01	.9[illegible]E+02	.1[illegible]E+01	
46	.4546E+02	.1042E+02	.3[illegible]E+01	0.	.6[illegible]E+00	-.[illegible]E 11	0.	.1134E+01	.7[illegible]E+02	.1[illegible]E+01	

SECOND INDEX= 2

IST	P/PINF	RHO/RINF	U/QINF	V/QINF	T/TINF	S/SINF	HT/HTINF	MACH	LBHR/QINF	VBHT/QINF	CP
1	.2508E+01	.1879E+01	.7964E+00	-.1371E-02	.1784E+01	.1035E+01	.1011E+01	.1447E+01	-.7956E+00	.1316E-02	.4933E+00
2	.2509E+01	.1880E+01	.7995E+00	-.1376E-02	.1784E+01	.1035E+01	.1041E+01	.1446E+01	-.7995E+00	.1379E-02	.4956E+00
3	.2618E+01	.1935E+01	.7963E+00	-.3075E-02	.1854E+01	.1054E+01	.1014E+01	.1451E+01	-.7962E+00	.2954E-02	.5291E+00
4	.2827E+01	.2041E+01	.7877E+00	.2514E-02	.1984E+01	.1091E+01	.1045E+01	.1470E+01	-.7884E+00	-.2493E-02	.5794E+00
5	.3054E+01	.2155E+01	.7754E+00	.2194E-01	.2136E+01	.1129E+01	.1065E+01	.1494E+01	-.7753E+00	-.6721E-02	.6314E+00
6	.3231E+01	.2244E+01	.7554E+00	.5164E-01	.2254E+01	.1161E+01	.1080E+01	.1516E+01	-.7559E+00	-.6435E-02	.6769E+00
7	.3364E+01	.2319E+01	.7353E+00	.9274E-01	.2358E+01	.1191E+01	.1095E+01	.1537E+01	-.7355E+00	.8065E-02	.7151E+00
8	.3521E+01	.2397E+01	.7127E+00	.1191E+00	.2471E+01	.1224E+01	.1108E+01	.1561E+01	-.7131E+00	.1603E-01	.7549E+00
9	.3646E+01	.2462E+01	.6959E+00	.1554E+00	.2566E+01	.1253E+01	.1119E+01	.1581E+01	-.7071E+00	.6067E-02	.7865E+00
10	.3710E+01	.2496E+01	.6814E+00	.1414E+00	.2619E+01	.1270E+01	.1126E+01	.1592E+01	-.6952E+00	-.2918E-02	.8056E+00
11	.3727E+01	.2504E+01	.6721E+00	.1475E+00	.2641E+01	.1277E+01	.1128E+01	.1597E+01	-.6878E+00	-.3263E-02	.8151E+00
12	.3718E+01	.2498E+01	.6677E+00	.1504E+00	.2638E+01	.1276E+01	.1127E+01	.1597E+01	-.6841E+00	-.3798E-02	.8188E+00
13	.3687E+01	.2480E+01	.6645E+00	.1464E+00	.2624E+01	.1271E+01	.1124E+01	.1593E+01	-.6815E+00	-.4225E-02	.8179E+00
14	.3641E+01	.2451E+01	.6606E+00	.1369E+00	.2598E+01	.1263E+01	.1120E+01	.1586E+01	-.6787E+00	-.4543E-02	.8065E+00
15	.3575E+01	.2410E+01	.6570E+00	.1281E+00	.2565E+01	.1251E+01	.1114E+01	.1576E+01	-.6764E+00	-.4695E-02	.8016E+00
16	.3499E+01	.2359E+01	.6490E+00	.1244E+00	.2527E+01	.1236E+01	.1104E+01	.1560E+01	-.6706E+00	-.2004E-02	.8117E+00
17	.3419E+01	.2306E+01	.6355E+00	.1291E+00	.2484E+01	.1219E+01	.1090E+01	.1539E+01	-.6575E+00	.1665E-02	.7929E+00
18	.3413E+01	.2302E+01	.6295E+00	.1210E+00	.2479E+01	.1217E+01	.1088E+01	.1535E+01	-.6517E+00	.6199E-02	.7863E+00
19	.3416E+01	.2305E+01	.6295E+00	.1210E+00	.2482E+01	.1218E+01	.1089E+01	.1535E+01	-.6515E+00	.1005E-01	.7866E+00
20	.3408E+01	.2299E+01	.6278E+00	.1230E+00	.2474E+01	.1215E+01	.1086E+01	.1529E+01	-.6504E+00	-.1784E-02	.7875E+00
21	.3466E+01	.2338E+01	.6414E+00	.1259E+00	.2518E+01	.1235E+01	.1101E+01	.1558E+01	-.6622E+00	.9004E-02	.7718E+00
22	.3540E+01	.2389E+01	.6581E+00	.1208E+00	.2575E+01	.1259E+01	.1121E+01	.1594E+01	-.6764E+00	-.5404E-01	.7554E+00
23	.3604E+01	.2432E+01	.6761E+00	.1277E+00	.2619E+01	.1276E+01	.1135E+01	.1622E+01	-.6927E+00	-.7166E-01	.7405E+00
24	.3695E+01	.2493E+01	.7017E+00	.1216E+00	.2685E+01	.1302E+01	.1156E+01	.1662E+01	-.7162E+00	-.1049E+00	.7214E+00
25	.3691E+01	.2490E+01	.7160E+00	.1302E+00	.2681E+01	.1301E+01	.1155E+01	.1659E+01	-.7301E+00	-.9[illegible]E+00	.7[illegible]E+00
26	.3917E+01	.2643E+01	.7278E+00	.1349E+00	.2845E+01	.1364E+01	.1205E+01	.1754E+01	-.7360E+00	-.5[illegible]E+00	.6[illegible]E+00
27	.3857E+01	.2603E+01	.7565E+00	.1314E+00	.2801E+01	.1347E+01	.1[illegible]E+01	.1748E+01	.1618E+00	-.9152E+00	.6444E+00
28	.3729E+01	.2516E+01	.7810E+00	.1360E+00	.2708E+01	.1312E+01	.1[illegible]E+01	.1577E+01	.5558E+00	-.7715E+00	.5[illegible]E+00
29	.3728E+01	.2515E+01	.7870E+00	.1308E+00	.2707E+01	.1312E+01	.1[illegible]E+01	.1576E+01	.7778E+00	-.1976E+00	.5[illegible]E+00
30	.3821E+01	.2579E+01	.7795E+00	.1455E+00	.2775E+01	.1338E+01	.1[illegible]E+01	.1597E+01	.8[illegible]E+00	-.9[illegible]E-01	.5[illegible]E+00
31	.3898E+01	.2631E+01	.7744E+00	.1361E+00	.2831E+01	.1359E+01	.1[illegible]E+01	.1613E+01	.8958E+00	.1[illegible]E-01	.6[illegible]E+00
32	.3965E+01	.2676E+01	.7745E+00	.1[illegible]E+00	.2880E+01	.1377E+01	.1[illegible]E+01	.1627E+01	.8[illegible]E+00	-.9[illegible]E-01	.6[illegible]E+00
33	.3041E+01	.2[illegible]E+01	.7[illegible]E+00	.1[illegible]E+00	.2[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.8[illegible]E+00	.5[illegible]E-01	.6[illegible]E+00
34	.3038E+01	.2[illegible]E+01	.7[illegible]E+00	.1[illegible]E+00	.2[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.7[illegible]E+00	.1[illegible]E+00	.6[illegible]E+00
35	.3[illegible]E+01	.2[illegible]E+01	.7[illegible]E+00	.1[illegible]E+00	.2[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.7[illegible]E+00	.[illegible]E-01	.[illegible]E+00
36	.3[illegible]E+01	.2[illegible]E+01	.7[illegible]E+00	.1[illegible]E+00	.2[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.8[illegible]E+00	.5[illegible]E-01	.6[illegible]E+00
37	.3[illegible]E+01	.2[illegible]E+01	.7[illegible]E+00	.1[illegible]E+00	.2[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.7[illegible]E+00	-.1[illegible]E-01	.6[illegible]E+00
38	.3[illegible]E+01	.2[illegible]E+01	.7[illegible]E+00	.1[illegible]E+00	.2[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.7[illegible]E+00	-.1[illegible]E-01	.6[illegible]E+00
39	.3[illegible]E+01	.2[illegible]E+01	.7[illegible]E+00	.1[illegible]E+00	.2[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.7[illegible]E+00	-.1[illegible]E-01	.6[illegible]E+00
40	.2801E+01	.2135E+01	.8554E+00	.[illegible]E+00	.2[illegible]E+01	.9[illegible]E+00	.1[illegible]E+01	.1[illegible]E+01	.8[illegible]E+00	.1[illegible]E-01	.5[illegible]E+00
41	.2323E+01	.1804E+01	.8[illegible]E+00	.[illegible]E+00	.1[illegible]E+01	.8[illegible]E+00	.1[illegible]E+01	.1716E+01	.9[illegible]E+00	.2[illegible]E-01	.4[illegible]E+00
42	.1911E+01	.1584E+01	.9[illegible]E+00	.1[illegible]E+00	.1[illegible]E+01	.7[illegible]E+00	.1[illegible]E+01	.1[illegible]E+01	.9[illegible]E+00	.1[illegible]E-01	.2[illegible]E+00

93	.1572E+01	.1369E+01	.9782E+00	.1718E+00	.1495E+01	.1015E+01	.1[illegible]E+01	.1927E+01	.9870E+00	.5679E-02	.1869E+00
94	.1529E+01	.1330E+01	.9908E+00	.4[illegible]E-01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1977E+01	.[illegible]E+00	.9699E-02	.1078E+00
95	.1205E+01	.1120E+01	.9864E+00	.3111E-01	.1194E+01	.1[illegible]E+01	.1[illegible]E+01	.1981E+01	.9821E+00	.1018E-01	.4469E-01
96	.1205E+01	.1120E+01	.9864E+00	.3111E-01	.1194E+01	.1[illegible]E+01	.1[illegible]E+01	.1981E+01	.9864E+00	.9915E-01	.4469E-01

1ST	JACOBIAN	X	Y	DX1/DT	DX1/DX	DY1/DX	[illegible]	DETA/DX	DETA/DY	ET/ETINF
1	.1224E+02	.1709E+02	.3555E+01	0.	-.2863E+00	.1[illegible]E-31	0.	-.8[illegible]E-02	-.9[illegible]E+02	.1551E+01
2	.1727E+02	.1490E+02	.3555E+01	.3[illegible]E-01	-.[illegible]E+00	.[illegible]	.[illegible]	-.[illegible]E-02	-.[illegible]E+02	.1555E+01
3	.2145E+02	.1208E+02	.3555E+01	.[illegible]	-.[illegible]	.[illegible]	.[illegible]	-.[illegible]E-02	-.[illegible]E+02	.1557E+01
4	.2997E+02	.1003E+02	.3554E+01	.1[illegible]	-.[illegible]	.[illegible]	.[illegible]	-.[illegible]E-02	-.[illegible]E+02	.1558E+01
5	.4264E+02	.9009E+01	.3552E+01	.1[illegible]	-.[illegible]	.[illegible]	.[illegible]	.[illegible]E-02	-.[illegible]E+02	.1558E+01
6	.7136E+02	.8015E+01	.3548E+01	.9[illegible]	-.[illegible]	.[illegible]	.[illegible]	.[illegible]	-.[illegible]E+02	.1559E+01
7	.1458E+03	.7515E+01	.3545E+01	.9[illegible]	-.[illegible]	.[illegible]	.[illegible]	.[illegible]	-.[illegible]E+02	.1559E+01
8	.2535E+03	.7265E+01	.3541E+01	.9[illegible]	-.[illegible]	.[illegible]	.[illegible]	.[illegible]	-.[illegible]E+02	.1560E+01
9	.3201E+03	.7133E+01	.3538E+01	.8[illegible]	-.[illegible]	.[illegible]	.[illegible]	.[illegible]	-.[illegible]E+02	.1560E+01
10	.3177E+03	.7004E+01	.3532E+01	.1[illegible]	.[illegible]	.[illegible]	.[illegible]	.[illegible]	-.[illegible]E+02	.1560E+01
11	.3175E+03	.6877E+01	.3526E+01	.5[illegible]	-.[illegible]	.[illegible]	.[illegible]	.[illegible]	-.[illegible]E+02	.1560E+01
12	.3191E+03	.6751E+01	.3520E+01	.1[illegible]	-.[illegible]	.[illegible]	.[illegible]	.[illegible]	-.[illegible]E+02	.1560E+01
13	.3215E+03	.6626E+01	.3514E+01	1[illegible]	.[illegible]	.[illegible]	.[illegible]	.[illegible]	-.[illegible]E+02	.1560E+01
14	.3238E+03	.6499E+01	.3508E+01	.1[illegible]	-.[illegible]	.[illegible]	.[illegible]	.[illegible]	-.[illegible]E+02	.1560E+01
15	.3255E+03	.6375E+01	.3502E+01	.1[illegible]	-.[illegible]	.[illegible]	.[illegible]	.[illegible]	-.[illegible]E+02	.1561E+01
16	.3258E+03	.6249E+01	.3497E+01	.9[illegible]	-.[illegible]	.[illegible]	.[illegible]	.[illegible]	-.[illegible]E+02	.1561E+01
17	.3225E+03	.6126E+01	.3491E+01	-.2[illegible]	-.[illegible]	-.[illegible]	-.[illegible]	.[illegible]	-.[illegible]E+02	.1561E+01
18	.3133E+03	.6019E+01	.3486E+01	-.3[illegible]	-.[illegible]	-.[illegible]	-.[illegible]	.[illegible]	-.[illegible]E+02	.1561E+01
19	.3134E+03	.5906E+01	.3480E+01	.9[illegible]	-.[illegible]	-.[illegible]	-.[illegible]	.[illegible]	-.[illegible]E+02	.1561E+01
20	.3048E+03	.5913E+01	.3475E+01	.2[illegible]	-.[illegible]	-.[illegible]	-.[illegible]	.[illegible]	-.[illegible]E+02	.1561E+01
21	.3098E+03	.5883E+01	.3469E+01	.2[illegible]	-.[illegible]	-.[illegible]	-.[illegible]	.[illegible]	-.[illegible]E+02	.1561E+01
22	.3080E+03	.5870E+01	.3464E+01	.1[illegible]	-.[illegible]	-.[illegible]	-.[illegible]	.[illegible]	-.[illegible]E+02	.1561E+01
23	.2234E+03	.5864E+01	.3459E+01	.1[illegible]	-.[illegible]	-.[illegible]	-.[illegible]	.[illegible]	-.[illegible]E+02	.1560E+01
24	.2254E+03	.5825E+01	.3453E+01	.1[illegible]	-.[illegible]	-.[illegible]	-.[illegible]	.[illegible]	-.[illegible]E+02	.1559E+01
25	.3124E+03	.5813E+01	.3448E+01	.1[illegible]	-.[illegible]	-.[illegible]	-.[illegible]	.[illegible]	-.[illegible]E+02	.1558E+01
26	.3967E+03	.5798E+01	.3442E+01	.1[illegible]	-.[illegible]	-.[illegible]	-.[illegible]	.[illegible]	-.[illegible]E+02	.1557E+01
27	.3235E+03	.5787E+01	.3437E+01	.1[illegible]	-.[illegible]	.[illegible]	.[illegible]	-.[illegible]	-.[illegible]E+02	.1556E+01
28	.3127E+03	.5775E+01	.3431E+01	.1[illegible]	.[illegible]	.[illegible]	.[illegible]	-.[illegible]	.2754E+01	.1275E+01
29	.2629E+03	.5765E+01	.3426E+01	.3[illegible]	.[illegible]	.[illegible]	.[illegible]	-.[illegible]	.[illegible]E+02	.1764E+01
30	.2657E+03	.5757E+01	.3420E+01	.3[illegible]	.[illegible]	.[illegible]	.[illegible]	-.[illegible]	.[illegible]E+02	.1765E+01
31	.2964E+03	.5811E+01	.3414E+01	.2[illegible]	.[illegible]	.[illegible]	.[illegible]	-.[illegible]	.[illegible]E+02	.1766E+01
32	.2139E+03	.5830E+01	.3409E+01	.6[illegible]	.[illegible]	.[illegible]	.[illegible]	-.[illegible]	.[illegible]E+02	.1766E+01
33	.2023E+03	.5844E+01	.3403E+01	-.6[illegible]	.[illegible]	.[illegible]	.[illegible]	-.[illegible]	.[illegible]E+02	.1767E+01
34	.1989E+03	.5863E+01	.3398E+01	-.1[illegible]	.[illegible]	.[illegible]	.[illegible]	-.[illegible]	.[illegible]E+02	.1767E+01
35	.1103E+03	.5899E+01	.3392E+01	-.2[illegible]	.[illegible]	.[illegible]	.[illegible]	-.[illegible]	.[illegible]E+02	.1767E+01
36	.3953E+03	.5963E+01	.3386E+01	-.2[illegible]	.[illegible]	.[illegible]	.[illegible]	-.[illegible]	.[illegible]E+02	.1767E+01
37	.4540E+03	.6067E+01	.3381E+01	.6[illegible]	.[illegible]	.[illegible]	.[illegible]	-.[illegible]	.[illegible]E+02	.1767E+01
38	.3627E+01	.6170E+01	.3375E+01	.2[illegible]	.[illegible]	.[illegible]	.[illegible]	-.[illegible]	.[illegible]E+02	.1767E+01
39	.2175E+01	.6356E+01	.3370E+01	.2[illegible]	.[illegible]	.[illegible]	.[illegible]	-.[illegible]	.[illegible]E+02	.1767E+01
40	.1801E+01	.6609E+01	.3364E+01	.1[illegible]	.[illegible]	.[illegible]	.[illegible]	-.[illegible]	.[illegible]E+02	.1767E+01
41	.2013E+01	.6801E+01	.3359E+01	-.7[illegible]	.[illegible]	.[illegible]	.[illegible]	-.[illegible]	.[illegible]E+02	.1767E+01
42	.1576E+01	.7013E+01	.3353E+01	-.6[illegible]	.[illegible]	.[illegible]	.[illegible]	.[illegible]	.[illegible]E+02	.1767E+01
43	.9036E+02	.7510E+01	.3347E+01	-.9[illegible]	.[illegible]	.[illegible]	.[illegible]	-.[illegible]	.[illegible]E+02	.1767E+01
44	.7105E+02	.8019E+01	.3342E+01	-.1[illegible]	.[illegible]	.[illegible]	.[illegible]	-.[illegible]	.[illegible]E+02	.1767E+01
45	.3760E+02	.9011E+01	.3336E+01	-.2[illegible]	.[illegible]	.[illegible]	.[illegible]	-.[illegible]	.[illegible]E+02	.1767E+01
46	.2336E+02	.1041E+02	.3330E+01	0.	.[illegible]	.[illegible]	0.	.[illegible]	.3772E+02	.1767E+01

SECOND INDEX= 3

1ST	P/PINF	RHO/RINF	U/QINF	V/QINF	T/TINF	S/SINF	HT/H'INF	MACH	UERR/QINF	VERR/QINF	CP
1	.2511E+01	.1861E+01	.7970E+00	-.3191E-02	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.7970E+00	.3009E-02	.9960E+00
2	.2513E+01	.1861E+01	.7965E+00	-.3194E-02	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.7966E+00	.3160E-02	.9945E+00
3	.2615E+01	.1935E+01	.7978E+00	-.9[illegible]E-02	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.7975E+00	.9505E-02	.9291E+00
4	.2803E+01	.2035E+01	.7848E+00	.1[illegible]E-02	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.7855E+00	-.1905E-02	.8897E+00
5	.3015E+01	.2138E+01	.7703E+00	.2[illegible]E-01	.2[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.7715E+00	-.8540E-02	.6559E+00
6	.3202E+01	.2235E+01	.7510E+00	.5[illegible]E-01	.2[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.7589E+00	-.9758E-02	.3209E+00
7	.3260E+01	.2318E+01	.7281E+00	.8[illegible]E-01	.2[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.7398E+00	.1196E-01	.7716E+00
8	.3302E+01	.2395E+01	.7079E+00	.1[illegible]E+00	.2[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.7214E+00	.2273E-01	.8187E+00
9	.3413E+01	.2455E+01	.6905E+00	.1[illegible]E+00	.2[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.7061E+00	.1769E-01	.8749E+00
10	.3476E+01	.2488E+01	.6780E+00	.1[illegible]E+00	.2[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.6974E+00	.6899E-03	.8754E+00
11	.3499E+01	.2495E+01	.6710E+00	.1[illegible]E+00	.2[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.6961E+00	-.1998E-02	.8832E+00
12	.3494E+01	.2490E+01	.6695E+00	.1[illegible]E+00	.2[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.6965E+00	-.3115E-02	.8834E+00

13	.3862E+01	.2476E+01	.6687E+00	.1646E+00	.2[illegible]E+01	.10[illegible]E+01	.1[illegible]E+01	.1179E+01	-.6880E+00	-.3982E-02	.8707E+00
14	.3614E+01	.2465E+01	.6715E+00	.1777E+00	.2[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.6[illegible]E+00	-.3[illegible]E-02	.8[illegible]E+00
15	.3553E+01	.2423E+01	.6759E+00	.1[illegible]E+00	.2[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.[illegible]E+01	-.7011E+00	-.6193E-04	.8[illegible]E+00
16	.3488E+01	.2397E+01	.6805E+00	.1[illegible]E+00	.2[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.7112E+00	.8873E-02	.8135E+00
17	.3421E+01	.2363E+01	.6853E+00	.2[illegible]E+00	.2[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.7153E+00	.2371E-02	.7737E+00
18	.3357E+01	.2335E+01	.6901E+00	.2[illegible]E+00	.2[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.7[illegible]E+00	.5261E-02	.7767E+00
19	.3314E+01	.2306E+01	.6934E+00	.2[illegible]E+00	.2[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.7[illegible]E+00	.1114E-01	.7561E+00
20	.3217E+01	.2253E+01	.6969E+00	.2[illegible]E+00	.2[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.7[illegible]E+00	-.1[illegible]E-01	.7351E+00
21	.3071E+01	.2181E+01	.6975E+00	.2[illegible]E+00	.2[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.7[illegible]E+00	-.2[illegible]E-01	.6779E+00
22	.2893E+01	.2090E+01	.6975E+00	.2[illegible]E+00	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.6[illegible]E+00	-.9[illegible]E-01	.6185E+00
23	.2715E+01	.2017E+01	.6975E+00	.2[illegible]E+00	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.6[illegible]E+00	-.1[illegible]E+00	.5716E+00
24	.2658E+01	.1984E+01	.6975E+00	.3[illegible]E+00	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.[illegible]E+00	-.3[illegible]E+00	.5[illegible]E+00
25	.2556E+01	.1966E+01	.7191E+00	.3[illegible]E+00	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.2[illegible]E+00	-.4[illegible]E+00	.[illegible]E+00
26	.2331E+01	.1838E+01	.7054E+00	.3[illegible]E+00	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+00	-.9[illegible]E+00	.4[illegible]E+00
27	.1996E+01	.1782E+01	.8925E+00	.3[illegible]E+00	.1[illegible]E+01	.[illegible]E+01	.1[illegible]E+01	.1996E+01	.4775E+00	-.1156E+01	.3[illegible]E+00
28	.2003E+01	.1816E+01	.9405E+00	.3[illegible]E+00	.1[illegible]E+01	.8[illegible]E+00	.1[illegible]E+01	.[illegible]E+01	.6[illegible]E+00	-.8[illegible]E+00	.3[illegible]E+00
29	.2304E+01	.1913E+01	.8678E+00	.3[illegible]E+00	.[illegible]E+01	.[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.7731E+00	-.4[illegible]E+00	.4[illegible]E+00
30	.2578E+01	.2050E+01	.8[illegible]E+00	.3[illegible]E+00	.[illegible]E+01	.[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.8527E+00	-.1968E+00	.5[illegible]E+00
31	.2821E+01	.2194E+01	.8114E+00	.3[illegible]E+00	.2[illegible]E+01	.[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.[illegible]E+00	-.5[illegible]E-01	.5[illegible]E+00
32	.2995E+01	.2324E+01	.7813E+00	.3[illegible]E+00	.2[illegible]E+01	.9[illegible]E+00	.1[illegible]E+01	.1[illegible]E+01	.8[illegible]E+00	.2[illegible]E-01	.6[illegible]E+00
33	.3129E+01	.2413E+01	.7699E+00	.3[illegible]E+00	.2[illegible]E+01	.9[illegible]E+00	.1[illegible]E+01	.1[illegible]E+01	.8[illegible]E+00	.1254E+00	.6[illegible]E+00
34	.3271E+01	.2480E+01	.7[illegible]E+00	.3[illegible]E+00	.2[illegible]E+01	.9[illegible]E+00	.1[illegible]E+01	.1[illegible]E+01	.7224E+00	.2698E+00	.7[illegible]E+00
35	.3404E+01	.2548E+01	.7359E+00	.3[illegible]E+00	.2[illegible]E+01	.9[illegible]E+00	.1[illegible]E+01	.1[illegible]E+01	.7045E+00	.9067E-01	.8[illegible]E+00
36	.3493E+01	.2579E+01	.7386E+00	.3[illegible]E+00	.2[illegible]E+01	.9[illegible]E+00	.1[illegible]E+01	.1[illegible]E+01	.8234E+00	-.6538E-01	.8[illegible]E+00
37	.3728E+01	.2649E+01	.7115E+00	.2[illegible]E+00	.2[illegible]E+01	.9[illegible]E+00	.1[illegible]E+01	.1[illegible]E+01	.7698E+00	.6335E-02	.8[illegible]E+00
38	.3629E+01	.2580E+0.	.7278E+00	.2[illegible]E+00	.2[illegible]E+01	.9[illegible]E+00	.1[illegible]E+01	.1[illegible]E+01	.7994E+00	-.1163E-01	.8[illegible]E+00
39	.3508E+01	.2490E+01	.7[illegible]E+00	.2[illegible]E+00	.2[illegible]E+01	.9[illegible]E+00	.1[illegible]E+01	.1[illegible]E+01	.8329E+00	-.2878E-01	.8[illegible]E+00
40	.2899E+01	.2194E+01	.8[illegible]E+00	.2[illegible]E+00	.2[illegible]E+01	.9[illegible]E+00	.1[illegible]E+01	.1[illegible]E+01	.8408E+00	.1816E-01	.6[illegible]E+00
41	.2371E+01	.1856E+01	.8[illegible]E+00	.2[illegible]E+00	.1[illegible]E+01	.9[illegible]E+00	.1[illegible]E+01	.1[illegible]E+01	.8[illegible]E+00	.5555E-01	.9[illegible]E+00
42	.1938E+01	.1599E+01	.9053E+00	.1[illegible]E+00	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.9[illegible]E+00	.2[illegible]E-01	.3[illegible]E+00
43	.1584E+01	.1370E+01	.9[illegible]E+00	.1[illegible]E+00	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.9[illegible]E+00	.8[illegible]E-02	.1[illegible]E+00
44	.1341E+01	.1213E+01	.9[illegible]E+00	.6[illegible]E-01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.9[illegible]E+00	.1[illegible]E-01	.1[illegible]E+00
45	.1259E+01	.1153E+01	.9[illegible]E+00	.3[illegible]E-01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.9[illegible]E+00	.7[illegible]E-3[illegible]	.1[illegible]E-01
46	.1230E+01	.1135E+01	.9[illegible]E+00	.5[illegible]E-01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.9[illegible]E+00	.4[illegible]E-01	.1[illegible]E-01

ISI	JACOBIAN	X	Y	DX1/DT	DX1/DS	DX1/DY	DX2/DT	DX2/DS	DX2/DY	X1/E1[illegible]
1	.9226E+01	.1766E+02	.3[illegible]E+01	0.	-.2[illegible]E+0[illegible]	0.	0	-.5[illegible]E-02	-.3[illegible]E+02	.1335E+01
2	.1295E+02	.1901E+02	.3[illegible]E+01	.3[illegible]E-01	-.[illegible]E+00	-.[illegible]E-01	.[illegible]E-01	-.[illegible]E-02	-.3[illegible]E+02	.1335E+01
3	.1613E+02	.1[illegible]E+02	.3[illegible]E+01	.[illegible]E-01	-.[illegible]E+0[illegible]	-.[illegible]E-02	.1[illegible]E-01	-.[illegible]E-01	-.3[illegible]E+02	.1331E+01
4	.2275E+02	.1[illegible]E+02	.3[illegible]E+01	.1[illegible]E-01	-.[illegible]E+0[illegible]	-.[illegible]E+0[illegible]	.[illegible]E-01	-.[illegible]E-02	-.3[illegible]E+02	.1[illegible]E+01
5	.3394E+02	.9[illegible]E+01	.2[illegible]E+01	.1[illegible]E-01	-.[illegible]E+01	-.[illegible]E+0[illegible]	.[illegible]E-01	-.[illegible]E-01	-.3[illegible]E+02	.1[illegible]E+01
6	.5517E+02	.8[illegible]E+01	.2[illegible]E+01	.[illegible]E-01	-.[illegible]E+01	-.[illegible]E+01	.[illegible]E-01	-.[illegible]E-01	-.3[illegible]E+02	.1[illegible]E+01
7	.1063E+03	.7[illegible]E+01	.1[illegible]E+01	.1[illegible]E-01	-.[illegible]E+01	-.[illegible]E+01	.[illegible]E-01	-.[illegible]E-01	-.3[illegible]E+02	.1[illegible]E+01
8	.1770E+03	.6[illegible]E+01	.1[illegible]E+01	.[illegible]E-01	-.[illegible]E+01	-.[illegible]E+01	.[illegible]E-01	-.[illegible]E-01	-.3[illegible]E+02	.1[illegible]E+01
9	.2206E+03	.5[illegible]E+01	.1[illegible]E+01	.[illegible]E-01	-.[illegible]E+01	-.[illegible]E+01	.[illegible]E-01	-.[illegible]E-01	-.3[illegible]E+02	.1[illegible]E+01
10	.2619E+03	.4[illegible]E+01	.1[illegible]E+01	.[illegible]E-01	-.[illegible]E+01	-.[illegible]E+01	.[illegible]E-01	-.[illegible]E-01	-.3[illegible]E+02	.1[illegible]E+01
11	.2962E+03	.3[illegible]E+01	.1[illegible]E+01	.[illegible]E-01	-.[illegible]E+01	-.[illegible]E+01	.[illegible]E-01	-.[illegible]E-01	-.3[illegible]E+02	.1[illegible]E+01
12	.3194E+03	.3[illegible]E+01	.1[illegible]E+01	.[illegible]E-01	-.[illegible]E+01	-.[illegible]E+01	.[illegible]E-01	-.[illegible]E-01	-.3[illegible]E+02	.1[illegible]E+01
13	.3133E+03	.2[illegible]E+01	.1[illegible]E+01	.[illegible]E-01	-.[illegible]E+01	-.[illegible]E+01	.[illegible]E-01	-.[illegible]E-01	-.3[illegible]E+02	.1[illegible]E+01
14	.2125E+03	.2[illegible]E+01	.1[illegible]E+01	.[illegible]E-01	-.[illegible]E+01	-.[illegible]E+01	.[illegible]E-01	-.[illegible]E-01	-.3[illegible]E+02	.1[illegible]E+01
15	.2150E+03	.2[illegible]E+01	.1[illegible]E+01	.[illegible]E-01	-.[illegible]E+01	-.[illegible]E+01	.[illegible]E-01	-.[illegible]E-01	-.3[illegible]E+02	.1[illegible]E+01
16	.2194E+03	.2[illegible]E+01	.1[illegible]E+01	.[illegible]E-01	-.[illegible]E+01	-.[illegible]E+01	.[illegible]E-01	-.[illegible]E-01	-.3[illegible]E+02	.1[illegible]E+01
17	.2[illegible]E+03	.1[illegible]E+01	.1[illegible]E+01	-.[illegible]E-01	-.[illegible]E+01	-.[illegible]E+01	.[illegible]E-01	-.[illegible]E-01	-.3[illegible]E+02	.1[illegible]E+01
18	.3[illegible]E+03	.1[illegible]E+01	.1[illegible]E+01	-.[illegible]E-01	-.[illegible]E+01	-.[illegible]E+01	.[illegible]E-01	-.[illegible]E-01	-.3[illegible]E+02	.1[illegible]E+01
19	.4[illegible]E+03	.1[illegible]E+01	.1[illegible]E+01	.[illegible]E-01	-.[illegible]E+01	-.[illegible]E+01	.[illegible]E-01	-.[illegible]E-01	-.3[illegible]E+02	.1[illegible]E+01
20	.5[illegible]E+03	.1[illegible]E+01	.1[illegible]E+01	.[illegible]E-01	-.[illegible]E+01	-.[illegible]E+01	.[illegible]E-01	-.[illegible]E-01	-.3[illegible]E+02	.1[illegible]E+01
21	.7[illegible]E+03	.1[illegible]E+01	.1[illegible]E+01	.[illegible]E-01	-.[illegible]E+01	-.[illegible]E+01	.[illegible]E-01	-.[illegible]E-01	-.3[illegible]E+02	.1[illegible]E+01
22	.9[illegible]E+03	.1[illegible]E+01	.1[illegible]E+01	.[illegible]E-01	-.[illegible]E+01	-.[illegible]E+01	.[illegible]E-01	-.[illegible]E-01	-.3[illegible]E+02	.1[illegible]E+01
23	.1115E+04	.1[illegible]E+01	.1[illegible]E+01	.[illegible]E-01	-.[illegible]E+01	-.[illegible]E+01	.[illegible]E-01	-.[illegible]E-01	-.3[illegible]E+02	.1[illegible]E+01
24	.1[illegible]E+04	.1[illegible]E+01	.1[illegible]E+01	.[illegible]E-01	-.[illegible]E+01	-.[illegible]E+01	.[illegible]E-01	-.[illegible]E-01	-.3[illegible]E+02	.1[illegible]E+01
25	.1[illegible]E+04	.1[illegible]E+01	.1[illegible]E+01	.[illegible]E-01	-.[illegible]E+01	-.[illegible]E+01	.[illegible]E-01	-.[illegible]E-01	-.3[illegible]E+02	.1[illegible]E+01
26	.1[illegible]E+04	.1[illegible]E+01	.1[illegible]E+01	.[illegible]E-01	-.[illegible]E+01	-.[illegible]E+01	.[illegible]E-01	-.[illegible]E-01	-.3[illegible]E+02	.1[illegible]E+01
27	.1[illegible]E+04	.1[illegible]E+01	.1[illegible]E+01	.[illegible]E-01	-.[illegible]E+01	-.[illegible]E+01	.[illegible]E-01	-.[illegible]E-01	-.3[illegible]E+02	.1[illegible]E+01
28	.1[illegible]E+04	.1[illegible]E+01	.1[illegible]E+01	.[illegible]E-01	-.[illegible]E+01	-.[illegible]E+01	.[illegible]E-01	-.[illegible]E-01	-.3[illegible]E+02	.1[illegible]E+01
29	.1[illegible]E+04	.1[illegible]E+01	.1[illegible]E+01	.[illegible]E-01	-.[illegible]E+01	-.[illegible]E+01	.[illegible]E-01	-.[illegible]E-01	-.3[illegible]E+02	.1[illegible]E+01
30	.1015E+04	.1[illegible]E+01	.1[illegible]E+01	.[illegible]E-01	-.[illegible]E+01	-.[illegible]E+01	.[illegible]E-01	-.[illegible]E-01	-.3[illegible]E+02	.1[illegible]E+01
31	.9[illegible]E+03	.1[illegible]E+01	.1[illegible]E+01	.[illegible]E-01	-.[illegible]E+01	-.[illegible]E+01	.[illegible]E-01	-.[illegible]E-01	-.3[illegible]E+02	.1[illegible]E+01

32	.9285E+03	.5818E+01	.3124E+01	.1692E-05	.3[illegible]E+02	.1339[illegible]+02	.3[illegible]E-05	-.7629E+01	.2138E+02	.1339E+01
33	.8563E+03	.5842E+01	.3132[illegible]+01	-.99[illegible]-06	.5778[illegible]+02	.[illegible]+01	.1[illegible]	-.[illegible]+01	.2[illegible]+02	.1351E+01
34	.7647E+03	.5865E+01	.3136[illegible]+01	-.3[illegible]	.5[illegible]+02	-.[illegible]+01	.[illegible]	[illegible]+01	.2[illegible]+02	.1364E+01
35	.5174E+03	.5901E+01	.3136[illegible]+01	-.[illegible]-05	.2[illegible]+02	-.[illegible]+01	.[illegible]	-.[illegible]+02	.2[illegible]+02	.1381E+01
36	.3140E+03	.5982E+01	.3117[illegible]+01	-.3[illegible]-05	.1[illegible]+02	-.[illegible]+01	.1[illegible]	.1[illegible]+02	.2771E+02	.1401E+01
37	.2537E+03	.6077E+01	.3[illegible]+01	-.29[illegible]-06	.111[illegible]+02	-.[illegible]+01	.[illegible]	-.1[illegible]+02	.2[illegible]+02	.1401[illegible]+01
38	.1986E+03	.6187E+01	.3[illegible]+01	.1[illegible]-05	.8[illegible]+01	-.[illegible]+01	.[illegible]	-.12[illegible]+02	.3[illegible]+02	.1401[illegible]+01
39	.1262E+03	.6381E+01	.3[illegible]+01	.1[illegible]-05	.5[illegible]+01	-.[illegible]+01	.[illegible]	-.10[illegible]+02	.2[illegible]+02	.1378E+01
40	.1048E+03	.6410E+01	.3[illegible]+01	.13[illegible]-05	.4[illegible]+01	-.87[illegible]+00	.[illegible]	-.7[illegible]+01	.2[illegible]+02	.1351[illegible]+01
41	.1113E+03	.6816E+01	.3[illegible]+01	.7[illegible]-06	.5[illegible]+01	-.1[illegible]+01	.[illegible]	-.[illegible]+01	.2[illegible]+02	.1275[illegible]+01
42	.8653E+02	.7055[illegible]+01	.3[illegible]+01	.9[illegible]-06	.5[illegible]+01	-.2[illegible]+01	.[illegible]	-.5[illegible]+01	.3[illegible]+02	.1215[illegible]+01
43	.5153E+02	.7567E+01	.3[illegible]+01	.1[illegible]-05	.2[illegible]+01	-.1[illegible]+01	.[illegible]	-.3[illegible]+01	.2[illegible]+02	.1157[illegible]+01
44	.4097E+02	.8057E+01	.3[illegible]+01	.1[illegible]-05	.1[illegible]+01	-.1[illegible]+01	.[illegible]	-.1[illegible]+01	.3[illegible]+02	.1110[illegible]+01
45	.2273E+02	.9073E+01	.3[illegible]+01	.9[illegible]-05	.8[illegible]+00	-.5[illegible]+00	.[illegible]	-.7[illegible]+00	.2[illegible]+02	.1056E+01
46	.1442E+02	.1042E+02	.3703E+01 0.		.6[illegible]E+00	.81[illegible] 12 0.		.2218E+00	.2294E+02	.1084E+01

SECOND INDEX= 4

1ST	P/PINF	RHO/RINF	U/QINF	V/QINF	ET/ETINF	S/SINF	HT/HTINF	MACH	UBAR/QINF	VBAR/QINF	CP
1	.2513E+01	.1884[illegible]+01	.7959[illegible]+00	-.5[illegible]-02	.1[illegible]+01	.1[illegible]+01	.1[illegible]+01	.1955[illegible]+01	-.7954[illegible]+00	.5104E-02	.4994E+00
2	.2513E+01	.1884[illegible]+01	.7994[illegible]+00	-.5[illegible]-02	.1[illegible]+01	.1[illegible]+01	.1[illegible]+01	.1955[illegible]+01	-.7994[illegible]+00	.5394E-02	.4956E+00
3	.2607E+01	.1933E+01	.7918[illegible]+00	-.6[illegible]-02	.1[illegible]+01	.1[illegible]+01	.1[illegible]+01	.1[illegible]+01	-.7914E+00	.5497E-02	.5256E+00
4	.2776E+01	.2020[illegible]+01	.7853[illegible]+00	.1[illegible]-02	.1[illegible]+01	.1[illegible]+01	.1[illegible]+01	.1[illegible]+01	-.7854[illegible]+00	-.1756E-02	.5808[illegible]+00
5	.2977E+01	.2123[illegible]+01	.7788[illegible]+00	.2[illegible]-01	.2[illegible]+01	.1[illegible]+01	.1[illegible]+01	.1[illegible]+01	-.7[illegible]+00	-.1031E-01	.6463E+00
6	.3171E+01	.2223E+01	.7493[illegible]+00	.5[illegible]-01	.2[illegible]+01	.1[illegible]+01	.1[illegible]+01	.1[illegible]+01	-.7573E+00	-.1266E 01	.7101E+00
7	.3341E+01	.2314[illegible]+01	.7270[illegible]+00	.8[illegible] 01	.2[illegible]+01	.1[illegible]+01	.1[illegible]	.1[illegible]+01	-.7243E+00	.1963E-01	.7654E+00
8	.3477E+01	.2387[illegible]+01	.7066[illegible]+00	.1[illegible]+00	.2[illegible]+01	.1[illegible]+01	.1[illegible]+01	.1[illegible]+01	-.6990E+00	.3868E-01	.8108E+00
9	.3576E+01	.2440[illegible]+01	.6897[illegible]+00	.1[illegible]+00	.2[illegible]+01	.1[illegible]+01	.1[illegible]+01	.1[illegible]+01	-.6972E+00	.3980E-01	.8414[illegible]+00
10	.3658E+01	.2497[illegible]+01	.6756[illegible]+00	.1[illegible]+00	.2[illegible]+01	.1[illegible]+01	.1[illegible]+01	.1[illegible]+01	-.6957[illegible]+00	.9861[illegible] 02	.8625[illegible]+00
11	.3604E+01	.2486[illegible]+01	.6733[illegible]+00	.1[illegible]+00	.2[illegible]+01	.1[illegible]+01	.1[illegible]+01	.1[illegible]+01	-.6[illegible]+00	.9978E-02	.8714E+00
12	.3655E+01	.2497[illegible]+01	.6719[illegible]+00	.1[illegible]+00	.2[illegible]+01	.1[illegible]+01	.1[illegible]+01	.1[illegible]+01	-.6964[illegible]+00	.1774[illegible]-02	.8693[illegible]+00
13	.3624E+01	.2490[illegible]+01	.6732[illegible]+00	.1[illegible]+00	.2[illegible]+01	.1[illegible]+01	.1[illegible]+01	.1[illegible]+01	-.6[illegible]+00	.1927E-03	.8736[illegible]+00
14	.3570E+01	.2458[illegible]+01	.6790[illegible]+00	.1[illegible]+00	.2[illegible]+01	.1[illegible]+01	.1[illegible]+01	.1[illegible]+01	-.6977[illegible]+00	-.8163E-04	.8604[illegible]+00
15	.3504E+01	.2420[illegible]+01	.6766[illegible]+00	.1[illegible]+00	.2[illegible]+01	.1[illegible]+01	.1[illegible]+01	.1[illegible]+01	-.7055E+00	.4702E-02	.8188[illegible]+00
16	.3450E+01	.2390[illegible]+01	.6785[illegible]+00	.2[illegible]+00	.2[illegible]+01	.1[illegible]+01	.1[illegible]+01	.1[illegible]+01	-.7137E+00	.1030E-01	.7[illegible]+00
17	.3340E+01	.2329[illegible]+01	.6778[illegible]+00	.2[illegible]+00	.2[illegible]+01	.1[illegible]+01	.1[illegible]+01	.1[illegible]+01	-.7115E+00	.5902E-02	.7674[illegible]+00
18	.3247E+01	.2274E+01	.6794[illegible]+00	.2[illegible]+00	.2[illegible]+01	.1[illegible]+01	.1[illegible]+01	.1[illegible]+01	-.7104E+00	-.1239E-02	.7356[illegible]+00
19	.3126E+01	.2213[illegible]+01	.6819[illegible]+00	.2[illegible]+00	.2[illegible]+01	.1[illegible]+01	.1[illegible]+01	.1[illegible]+01	-.7111E+00	-.7635E-02	.6995[illegible]+00
20	.2979E+01	.2134[illegible]+01	.6849[illegible]+00	.2[illegible]+00	.1[illegible]+01	.1[illegible]+01	.1[illegible]+01	.1[illegible]+01	-.7[illegible]+00	-.5003E-01	.6471[illegible]+00
21	.2820E+01	.2035[illegible]+01	.6898[illegible]+00	.2[illegible]+00	.1887[illegible]+01	.1[illegible]+01	.1[illegible]+01	.1[illegible]+01	-.6[illegible]+00	-.1004[illegible]+00	.5[illegible]+00
22	.2684E+01	.1965[illegible]+01	.6[illegible]+00	.2[illegible]+00	.1[illegible]+01	.1[illegible]+01	.1[illegible]+01	.1[illegible]+01	-.5[illegible]+00	-.2384E+00	.5504[illegible]+00
23	.2597E+01	.1956E+01	.7[illegible]+00	.2[illegible]+00	.1[illegible]+01	.1[illegible]+01	.[illegible]+00	.1[illegible]+01	-.4[illegible]+00	-.4076E+00	.5[illegible]+00
24	.2527E+01	.1899[illegible]+01	.7[illegible]+00	.3[illegible]+00	.1[illegible]+01	.1[illegible]+01	.[illegible]+00	.1[illegible]+01	-.3[illegible]+00	-.6054E+00	.4[illegible]+00
25	.2421E+01	.1853[illegible]+01	.7399[illegible]+00	.3[illegible]+00	.1[illegible]+01	.1[illegible]+01	.[illegible]+00	.1[illegible]+01	-.2[illegible]+00	-.8187E+00	.4[illegible]+00
26	.2254E+01	.1794[illegible]+01	.7737[illegible]+00	.3[illegible]+00	.1[illegible]+01	.1[illegible]+01	.[illegible]+00	.1[illegible]+01	-.2[illegible]+00	-.9[illegible]+00	.4[illegible]+00
27	.2063E+01	.1681E+01	.8[illegible]+00	.3[illegible]+00	.1[illegible]+01	.1[illegible]+01	.[illegible]+00	.1[illegible]+01	-.1[illegible]+00	-.1001E+01	.3[illegible]+00
28	.2099E+01	.1678[illegible]+01	.8[illegible]+00	.3[illegible]+00	.1[illegible]+01	.1[illegible]+01	.[illegible]+00	.1[illegible]+01	-.1[illegible]+00	-.7[illegible]+00	.3[illegible]+00
29	.2172E+01	.1747[illegible]+01	.8[illegible]+00	.2[illegible]+00	.1[illegible]+01	.1[illegible]+01	.[illegible]+00	.1[illegible]+01	-.[illegible]+00	-.4[illegible]+00	.3[illegible]+00
30	.2356E+01	.1837[illegible]+01	.8[illegible]+00	.2[illegible]+00	.1[illegible]+01	.1[illegible]+01	.[illegible]+00	.1[illegible]+01	.[illegible]+00	-.[illegible]+00	.4[illegible]+00
31	.2590E+01	.1958[illegible]+01	.8[illegible]+00	.2[illegible]+00	.1[illegible]+01	.1[illegible]+01	.[illegible]+00	.1[illegible]+01	.[illegible]+00	-.1[illegible]+00	.[illegible]+00
32	.2819E+01	.2077[illegible]+01	.7[illegible]+00	.2[illegible]+00	.1[illegible]+01	.1[illegible]+01	.[illegible]+00	.1[illegible]+01	.[illegible]+00	-.[illegible]+01	.[illegible]+00
33	.3041E+01	.2[illegible]+01	.7[illegible]+00	.2[illegible]+00	.1[illegible]+01	.1[illegible]+01	.[illegible]+00	.1[illegible]+01	.[illegible]+00	.[illegible]+01	.[illegible]+00
34	.3304E+01	.2[illegible]+01	.7[illegible]+00	.2[illegible]+00	.1[illegible]+01	.1[illegible]+01	.[illegible]+00	.1[illegible]+01	.[illegible]+00	.[illegible]+01	.[illegible]+00
35	.3549E+01	.2479E+01	.7156[illegible]+00	.2[illegible]+00	.1[illegible]+01	.1[illegible]+01	.[illegible]+00	.1[illegible]+01	.[illegible]+00	.[illegible]+01	.[illegible]+00
36	.3648E+01	.2550E+01	.7[illegible]+00	.2[illegible]+00	.1[illegible]+01	.1[illegible]+01	.[illegible]+00	.1[illegible]+01	.[illegible]+00	.[illegible]+01	.[illegible]+00
37	.3733E+01	.2588E+01	.6977[illegible]+00	.2[illegible]+00	.1[illegible]+01	.1[illegible]+01	.[illegible]+00	.1[illegible]+01	.[illegible]+00	.[illegible]+01	.[illegible]+00
38	.3801E+01	.2[illegible]+01	.7088[illegible]+00	.2[illegible]+00	.1[illegible]+01	.1[illegible]+01	.[illegible]+00	.1[illegible]+01	.[illegible]+00	-.5[illegible]+01	.[illegible]+00
39	.3807E+01	.2[illegible]+01	.7[illegible]+00	.2[illegible]+00	.1[illegible]+01	.1[illegible]+01	.[illegible]+00	.1[illegible]+01	.[illegible]+00	-.[illegible]+01	.[illegible]+00
40	.3900E+01	.2[illegible]+01	.7788[illegible]+00	.2[illegible]+00	.1[illegible]+01	.1[illegible]+01	.[illegible]+00	.1[illegible]+01	.[illegible]+00	.[illegible]+01	.[illegible]+00
41	.3942E+01	.1877[illegible]+01	.8[illegible]+00	.2[illegible]+00	.1[illegible]+01	.1[illegible]+01	.[illegible]+00	.1[illegible]+01	.[illegible]+00	.[illegible]+01	.[illegible]+00
42	.3959E+01	.1611[illegible]+01	.8761[illegible]+00	.1[illegible]+00	.1[illegible]+01	.1[illegible]+01	.[illegible]+00	.1[illegible]+01	.[illegible]+00	.[illegible] 01	.[illegible]+00
43	.3693[illegible]+01	.1586[illegible]+01	.9199[illegible]+00	.1[illegible]+00	.1[illegible]+02	.1[illegible]+01	.[illegible]+00	.1[illegible]+01	.[illegible]+00	.[illegible] 01	.[illegible]+00
44	.1588E+01	.1[illegible]+01	.9[illegible]+00	.6[illegible] 01	.1[illegible]+01	.1[illegible]+01	.[illegible]+00	.1[illegible]+01	.[illegible]+00	.[illegible] 01	.1[illegible]+00
45	.1273E+01	.1115[illegible]+01	.9918[illegible]+00	.5[illegible] 01	.1[illegible]+01	.1[illegible]+01	.[illegible]+00	.1[illegible]+01	.[illegible]+00	.9[illegible]-03	.8[illegible] 01
46	.1272E+01	.1199E+01	.9917[illegible]+00	.5[illegible] 01	.1[illegible]+01	.1[illegible]+01	.[illegible]+00	.1[illegible]+01	.[illegible]+00	.[illegible] 01	.8[illegible] 01

1ST	JACOBIAN	X	Y	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
1	.[illegible]+01	.1[illegible]+00	.[illegible]+01 0.		.[illegible]	.[illegible] 12 0.		.[illegible]	.[illegible]	.1[illegible]+01

Microfilmed From
Best Available Copy

2	.9856E+01	.1401E+02	.3492E+01	.4[illegible]E-04	-.4301E+00	-.4167[illegible] 01	.[illegible] 04	-.6[illegible]E-04	-.2663E+02	.1334E+01
3	.1231E+02	.1200E+02	.3495[illegible]+01	.3[illegible]-04	-.[illegible]	-.[illegible]	.[illegible] 04	-.[illegible] 01	-.2[illegible]E+02	.1334E+01
4	.1746E+02	.1001E+02	.3[illegible]+01	.1[illegible]	-.[illegible]	-.[illegible]	.[illegible] 01	.[illegible] 04	-.[illegible]	.1334E+01
5	.2597E+02	.9013E+01	.3495E+01	.5[illegible]	-.[illegible]	-.[illegible]	.[illegible]	.[illegible]	-.[illegible]	.1406E+01
6	.3994E+02	.8052E+01	.3[illegible]+01	.[illegible]	-.[illegible]	-.[illegible]	.[illegible]	.1693[illegible]+01	-.2981E+02	.1474E+01
7	.7757E+02	.7544E+01	.3[illegible]+01	.2[illegible]	-.[illegible]	-.[illegible]	.[illegible]	.2[illegible]+01	-.[illegible]	.1499E+01
8	.1235E+03	.7304E+01	.3[illegible]+01	.1[illegible]	-.[illegible]	-.[illegible]	.[illegible]	.5[illegible]+01	-.[illegible]	.1454E+01
9	.1517E+03	.7154E+01	.3[illegible]+01	.[illegible]	-.[illegible]	-.[illegible]	.[illegible]	.[illegible]	-.[illegible]	.1484E+01
10	.1511E+03	.7016E+01	.3[illegible]+01	.1[illegible]	-.[illegible]	-.[illegible]	.[illegible]	.[illegible]+01	-.[illegible]	.1477E+01
11	.1477E+03	.6883E+01	.3[illegible]+01	.3[illegible]	-.[illegible]	-.[illegible]	.[illegible]	.[illegible]+01	-.[illegible]	.1477E+01
12	.1447E+03	.6750E+01	.3[illegible]+01	.2[illegible]	-.[illegible]	.[illegible]	.[illegible]	.[illegible]+01	-.[illegible]	.1477E+01
13	.1425E+03	.6670E+01	.3[illegible]+01	.1[illegible]	-.[illegible]	.[illegible]	.[illegible]	.9615E+01	-.[illegible]	.1477E+01
14	.1410E+03	.6491E+01	.3[illegible]+01	.9[illegible]	-.[illegible]	.[illegible]	.[illegible]	.9777E+01	-.[illegible]	.1467E+01
15	.1400E+03	.6366E+01	.3[illegible]+01	.8[illegible]	-.[illegible]	.[illegible]	.[illegible]	.[illegible]	-.[illegible]	.1459E+01
16	.1462E+03	.6245E+01	.3[illegible]+01	.[illegible]	-.[illegible]	.[illegible]	.[illegible]	.5388E+01	-.1677E+02	.1451E+01
17	.1616E+03	.6134E+01	.3[illegible]+01	.[illegible]	-.[illegible]	-.[illegible]	.[illegible]	.5149E+01	-.1597E+02	.1446E+01
18	.2046E+03	.6048E+01	.3[illegible]+01	.[illegible]	-.[illegible]	-.[illegible]	.[illegible]	.5107E+01	-.1562E+02	.1428E+01
19	.2761E+03	.5986E+01	.3015E+01	-.[illegible]	-.[illegible]	-.[illegible]	.[illegible]	.5351E+01	-.1545E+02	.1413E+01
20	.3458E+03	.5936E+01	.2997E+01	.[illegible]	-.[illegible]	.[illegible]	.[illegible]	.4993E+01	-.1587E+02	.1394E+01
21	.4216E+03	.5894E+01	.2984E+01	.2[illegible]	-.[illegible]	.[illegible]	.[illegible]	.4973E+01	-.1697E+02	.1373E+01
22	.4821E+03	.5856E+01	.2976E+01	.4[illegible]	-.[illegible]	.[illegible]	.[illegible]	.2551E+01	-.1[illegible]	.1357E+01
23	.5197E+03	.5815E+01	.2971E+01	.1[illegible]	-.[illegible]	.[illegible]	.[illegible]	.[illegible]	-.[illegible]	.1341E+01
24	.5274E+03	.5784E+01	.2977E+01	.1[illegible]	-.[illegible]	.[illegible]	.[illegible]	.9711E+01	-.[illegible]	.1334E+01
25	.5104E+03	.5748E+01	.2993E+01	.6[illegible]	-.[illegible]	.[illegible]	.[illegible]	.9935E+01	-.[illegible]	.1334E+01
26	.4714E+03	.5714E+01	.3016E+01	-.[illegible]	-.[illegible]	.[illegible]	.[illegible]	.1339E+02	-.1177E+02	.1284E+01
27	.4538E+03	.5698E+01	.3048E+01	-.[illegible]	.[illegible]	.[illegible]	.[illegible]	-.[illegible]	-.6221E+01	.1229E+01
28	.4171E+03	.5693E+01	.3085E+01	-.[illegible]	.[illegible]	.[illegible]	.[illegible]	.2554E+01	.1218E+01
29	.4040E+03	.5710E+01	.3116E+01	.2[illegible]	.[illegible]	.[illegible]	.[illegible]	.9193E+01	.1247E+01
30	.4063E+03	.5755E+01	.3141E+01	.4[illegible]	.[illegible]	.[illegible]	.[illegible]	.1135E+02	.1285E+01
31	.3981E+03	.5767E+01	.3164E+01	.5[illegible]	.[illegible]	.[illegible]	.[illegible]	.1[illegible]	.1334E+01
32	.3796E+03	.5798E+01	.3171E+01	.3[illegible]	.[illegible]	.[illegible]	.[illegible]	.1[illegible]	.1356E+01
33	.3503E+03	.5835E+01	.3176E+01	-.[illegible]	.[illegible]	.[illegible]	.[illegible]	.1334E+02	.1387E+01
34	.3105E+03	.5879E+01	.3174E+01	-.[illegible]	.[illegible]	.[illegible]	.[illegible]	.1351E+02	.1407E+01
35	.2352E+03	.5970E+01	.3164E+01	-.[illegible]	.[illegible]	.[illegible]	.[illegible]	.1460E+02	.1434E+01
36	.1713E+03	.5998E+01	.3237E+01	-.[illegible]	.[illegible]	.[illegible]	.[illegible]	.1483E+02	.1444E+01
37	.1368E+03	.6094E+01	.3270E+01	-.[illegible]	.[illegible]	.[illegible]	.[illegible]	.1457E+02	.1443E+01
38	.1045E+03	.6211E+01	.3313E+01	.6[illegible]	.[illegible]	.[illegible]	.[illegible]	.1401E+02	.1434E+01
39	.7219E+02	.6400E+01	.3404E+01	.2[illegible]	.[illegible]	.[illegible]	.[illegible]	.1378E+02	.1397E+01
40	.6136E+02	.6674E+01	.3449E+01	.3[illegible]	.[illegible]	.[illegible]	.[illegible]	.1252E+02	.1356E+01
41	.6042E+02	.6853E+01	.3555E+01	.3[illegible]	.[illegible]	.[illegible]	.[illegible]	.1174E+02	.1370E+01
42	.4617E+02	.7074E+01	.3571E+01	.4[illegible]	.[illegible]	.[illegible]	.[illegible]	.1069E+02	.1241E+01
43	.2946E+02	.7554E+01	.3[illegible]+01	.[illegible]	.[illegible]	.[illegible]	.[illegible]	.1478E+02	.1196E+01
44	.2340E+02	.8074E+01	.3688E+01	.8[illegible]	.[illegible]	.[illegible]	.[illegible]	.1754E+02	.1150E+01
45	.1386E+02	.9058E+01	.3749E+01	.1149E 01	.[illegible]	.[illegible]	.[illegible]	.1629E+02	.1107E+01
46	.9053E+01	.1041E+02	.3757E+01 0.		.[illegible] 0.			.1405E+02	.1107E+01

SECOND INDEX= 5

1ST	P/PINF	PHO/RINF	U/QINF	V/QINF	ET/RTINF	S/SINF	MT/MTINF	MACH	UBAR/QINF	VBAR/QINF	CP
1	.2513E+01	.1887E+01	.7935E+00	-.7[illegible]E-02	.1785E+01	.1015E+01	.1[illegible]E+01	.1495E+01	-.7956E+00	.7487E-02	.4998E+00
2	.2514E+01	.1887E+01	.7936E+00	-.7[illegible]E-02	.1785E+01	.1015E+01	.1[illegible]E+01	.1496E+01	-.7956E+00	.7814E-02	.4995E+00
3	.2597E+01	.1951E+01	.7907E+00	-.7[illegible]E-02	.1855E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.7[illegible]E+00	.6177E-02	.5023E+00
4	.2751E+01	.2001E+01	.7852E+00	.1113E-02	.1914E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.7[illegible]	-.2334E-02	.5172E+00
5	.2944E+01	.2104E+01	.7678E+00	.2178E-01	.[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.7[illegible]E+00	-.1[illegible]E-01	.6351E+00
6	.3136E+01	.2206E+01	.7490E+00	.3149E-01	.[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.7[illegible]E+00	-.1[illegible]E-01	.6698E+00
7	.3308E+01	.2301E+01	.7288E+00	.4417E-01	.2[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.7[illegible]E+00	.1955E-01	.7[illegible]E+00
8	.3493E+01	.2417E+01	.7087E+00	.1115E+00	.2[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.6[illegible]E+00	.5822E-01	.7[illegible]E+00
9	.3536E+01	.2462E+01	.6975E+00	.1[illegible]E+00	.2[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.6[illegible]E+00	.5796E-01	.7[illegible]E+00
10	.3592E+01	.2491E+01	.6855E+00	.1[illegible]E+00	.2[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.6[illegible]E+00	.[illegible]E-01	.8997E+00
11	.3613E+01	.2495E+01	.6777E+00	.1[illegible]E+00	.2[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.6[illegible]E+00	.1736E-01	.8[illegible]E+00
12	.3595E+01	.2499E+01	.6[illegible]	.1[illegible]	.[illegible]	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.6[illegible]	.1[illegible]E-01	.9[illegible]E+00
13	.3598E+01	.2496E+01	.6[illegible]E+00	.1[illegible]	.[illegible]	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.6[illegible]	.8[illegible]E-01	.8[illegible]E+00
14	.3478E+01	.2381E+01	.6777E+00	.1[illegible]	.[illegible]	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.6[illegible]	.5[illegible]	.8[illegible]E+00
15	.3390E+01	.2316E+01	.6780E+00	.[illegible]	.[illegible]	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.6[illegible]	.1014E-01	.7[illegible]E+00
16	.3503E+01	.2398E+01	.6777E+00	.[illegible]	.[illegible]	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.6[illegible]	.6[illegible]	.7[illegible]E+00
17	.3197E+01	.2253E+01	.6774E+00	.[illegible]	.[illegible]	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.6[illegible]	.9[illegible]	.7[illegible]E+00
18	.3079E+01	.2191E+01	.6[illegible]E+00	.[illegible]	.[illegible]	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.7[illegible]	-.1[illegible]E-01	.6[illegible]E+00
19	.2914E+01	.2124E+01	.6[illegible]E+00	.[illegible]	.[illegible]	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.7[illegible]	-.5[illegible]E-01	.6[illegible]E+00

20	.2839E+01	.2069E+01	.6958E+00	.2784E+00	.1314E+01	[illegible]	[illegible]	.1357E+01	-.6670E+00	-.1437E+00	.6014E+00
21	.2744E+01	.2021E+01	.7056E+00	[illegible]	.1288E+01	[illegible]	[illegible]	.1471E+01	-.5719E+00	-.2874E+00	.5705E+00
22	.2681E+01	.1987E+01	.7248E+00	.2871E+00	.1264E+01	[illegible]	[illegible]	[illegible]	-.4137E+00	-.4415E+00	.5497E+00
23	.2639E+01	.1965E+01	.7294E+00	[illegible]	.1244E+01	[illegible]	[illegible]	[illegible]	-.2537E+00	-.6135E+00	.5531E+00
24	.2596E+01	.1935E+01	.7369E+00	.2811E+00	[illegible]	[illegible]	[illegible]	[illegible]	-.9682E-01	-.7591E+00	.5714E+00
25	.2535E+01	.1884E+01	.7431E+00	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	.1545E+00	-.8626E+00	[illegible]
26	.2454E+01	.1844E+01	.7564E+00	.2751E+00	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
27	.2387E+01	.1791E+01	.7664E+00	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
28	.2329E+01	.1755E+01	.7741E+00	[illegible]	[illegible]	[illegible]	[illegible]	.1477E+01	[illegible]	-.7153E+00	.9394E+00
29	.2313E+01	.1748E+01	.7871E+00	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
30	.2355E+01	.1777E+01	.7616E+00	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
31	.2455E+01	.1836E+01	.7854E+00	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	-.2678E+00	[illegible]
32	.2619E+01	.1918E+01	.7648E+00	[illegible]	.1854E+01	[illegible]	[illegible]	[illegible]	[illegible]	-.1378E+00	[illegible]
33	.2850E+01	.2094E+01	.7597E+00	.2127E+00	[illegible]	[illegible]	[illegible]	[illegible]	.7708E+00	.7714E-02	[illegible]
34	.3140E+01	.2301E+01	.7169E+00	.2291E+00	[illegible]	[illegible]	[illegible]	.1517E+01	.7604E+00	.1501E+00	[illegible]
35	.3406E+01	.2341E+01	.6965E+00	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	.7271E+00	.4501E-01	.7864E+00
36	.3581E+01	.2436E+01	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	.7614E+00	-.7507E-01	[illegible]
37	.3631E+01	.2472E+01	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	.7166E+00	.3544E-01	[illegible]
38	.3524E+01	.2427E+01	.6838E+00	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	.7498E+00	-.8877E-02	[illegible]
39	.3278E+01	.2305E+01	.7146E+00	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	-.5814E-01	[illegible]
40	.2936E+01	.2130E+01	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	.9085E-01	.6311E+00
41	.2516E+01	.1888E+01	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	.7621E+00	[illegible]	[illegible]
42	.2090E+01	.1658E+01	[illegible]	[illegible]	.1614E+01	[illegible]	[illegible]	[illegible]	.8124E+00	.8124E-01	[illegible]
43	.1720E+01	.1415E+01	.8704E+00	.1387E+00	.1391E+01	[illegible]	[illegible]	[illegible]	.8577E+00	.5858E-01	.2534E+00
44	.1465E+01	.1257E+01	.9013E+00	[illegible]	[illegible]	[illegible]	[illegible]	.1754E+01	.8696E+00	.5735E-01	.1554E+00
45	.1350E+01	.1183E+01	.9084E+00	[illegible]	.1194E+01	[illegible]	[illegible]	.1786E+01	.8968E+00	.2553E-01	.1145E+00
46	.1350E+01	.1183E+01	.9081E+00	[illegible]	.1194E+01	[illegible]	[illegible]	.1786E+01	.9081E+00	.5208E-01	.1144E+00

IST	JACOBIAN	X	Y	DXI/DT	DXI/DX	DXI/DY	DETA/DT	DETA/DX	DETA/DY	EI/EIINF
1	.5466E+01	.1766E+02	.3447E+01	0.	-.2874E+00	0.	0.	-.7084E-01	-.1895E+02	.1355E+01
2	.7629E+01	.1401E+02	.3447E+01	.6011E-04	[illegible]	.5671E-01	[illegible]	[illegible]	-.1902E+02	.1353E+01
3	.9545E+01	.1260E+02	.3447E+01	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	-.1872E+02	.1364E+01
4	.1361E+02	.1065E+02	.3454E+01	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	-.2031E+02	.1368E+01
5	.2055E+02	.9618E+01	.3451E+01	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	-.2037E+02	.1395E+01
6	.3046E+02	.8086E+01	.3454E+01	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	-.2174E+02	.1419E+01
7	.5725E+02	.7591E+01	.3374E+01	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	-.2141E+02	.1438E+01
8	.8701E+02	.7335E+01	.3351E+01	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	.1451E+01
9	.1046E+03	.7171E+01	.3276E+01	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	.1466E+01
10	.1047E+03	.7025E+01	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	.1468E+01
11	.1016E+03	.6885E+01	.3237E+01	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	.1465E+01
12	.9867E+02	.6748E+01	.3173E+01	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
13	[illegible]	.6619E+01	.3134E+01	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
14	.9553E+02	.6484E+01	.3103E+01	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
15	.9708E+02	.6358E+01	.3064E+01	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
16	.1036E+03	.6241E+01	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	.1434E+01
17	.1176E+03	.6137E+01	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	.1426E+01
18	.1431E+03	.6055E+01	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	.1405E+01
19	.1742E+03	.5984E+01	.2955E+01	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	.1386E+01
20	.2012E+03	.5924E+01	.2919E+01	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	.1371E+01
21	.2240E+03	.5867E+01	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	.1354E+01
22	.2356E+03	.5813E+01	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
23	.2346E+03	.5761E+01	.2918E+01	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
24	.2293E+03	.5712E+01	.2938E+01	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
25	.2169E+03	.5664E+01	.2968E+01	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
26	.2013E+03	[illegible]	.3007E+01	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
27	.1874E+03	[illegible]	.3057E+01	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
28	.1795E+03	[illegible]	.3110E+01	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
29	.1735E+03	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
30	.1714E+03	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
31	.1665E+03	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
32	.1580E+03	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
33	.1474E+03	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
34	.1358E+03	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
35	.1028E+03	.5930E+01	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	.1405E+01
36	.8773E+02	.6011E+01	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
37	[illegible]	.6115E+01	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
38	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

39	.4093E+02	.6429E+01	.3507E+01	.4711E-05	.9455E+01	-.9[illegible]E+00	.1[illegible]	-.7[illegible]E+01	.8147E+01	.1922E+01
40	.3514E+02	.6638E+01	.3553E+01	.5[illegible]E-05	.9[illegible]E+01	-.8[illegible]E+00	.1[illegible]	-.7[illegible]E+01	.7723E+01	.1386E+01
41	.3225E+02	.6863E+01	.3696E+01	.6[illegible]E-05	.9[illegible]E+01	-.1[illegible]E+01	.1[illegible]	-.[illegible]E+01	.7426E+01	.1335E+01
42	.2929E+02	.7150E+01	.3659E+01	.7[illegible]E-05	.2[illegible]E+01	-.1[illegible]E+01	.1[illegible]	-.[illegible]E+01	.6981E+01	.1276E+01
43	.1675E+02	.7405E+01	.3715E+01	.9[illegible]E-05	.2[illegible]E+01	-.1[illegible]E+01	.1[illegible]	-.8555E+00	.6459E+01	.1214E+01
44	.1354E+02	.8139E+01	.3755E+01	.1[illegible]E-04	.1[illegible]E+01	-.1[illegible]E+01	.1[illegible]	-.[illegible]E+00	.5918E+01	.1161E+01
45	.8554E+01	.9104E+01	.3[illegible]E+01	.1[illegible]	.8[illegible]E+00	.9[illegible]	.1[illegible]	-.[illegible]E+00	.5[illegible]E+01	.1141E+01
46	.5878E+01	.1[illegible]E+02	.3[illegible]E+01	0.	.6[illegible]E+00	.1[illegible]	0.	-.[illegible]	.8[illegible]E+01	.1141E+01

SECOND INDEX= 6

IST	P/P1NF	RHO/RHOINF	U/U1INF	V/U1INF	E1/E1INF	S/S1NF	HT/HT1INF	PRES	LOWER/UPPER	VBAR/U1INF	CP
1	.2511E+01	.1[illegible]E+01	.7[illegible]	-.1[illegible]	.1[illegible]	.1[illegible]	.1[illegible]	.1[illegible]	-.7[illegible]	.1[illegible]	.4[illegible]
2	.2513E+01	.1[illegible]E+01	.7[illegible]	-.1[illegible]	.1[illegible]	.1[illegible]	.1[illegible]	.1[illegible]	-.7[illegible]	.1[illegible]	.4[illegible]
3	.2508E+01	.1[illegible]E+01	.7[illegible]	-.[illegible]	.1[illegible]	.1[illegible]	.1[illegible]	.1[illegible]	-.[illegible]	.6[illegible]	.5[illegible]
4	.2[illegible]	.1[illegible]	.7[illegible]	.8[illegible]	.1[illegible]	.1[illegible]	.1[illegible]	.1[illegible]	-.[illegible]	-.[illegible]	.5[illegible]
5	.2[illegible]	.1[illegible]	.7[illegible]	.1[illegible]	.1[illegible]	.1[illegible]	.1[illegible]	.1[illegible]	-.[illegible]	-.1[illegible]	.6[illegible]
6	.3[illegible]	.2[illegible]	.7[illegible]	.1[illegible]	.1[illegible]	.1[illegible]	.1[illegible]	.1[illegible]	-.[illegible]	-.1[illegible]	.6[illegible]
7	.3264E+01	.2[illegible]	.7[illegible]	.8[illegible]	.2[illegible]	.1[illegible]	.1[illegible]	.1[illegible]	-.[illegible]	.2[illegible]	.7[illegible]
8	.3339E+01	.2755E+01	.7[illegible]	.1[illegible]	.2[illegible]	.1[illegible]	.1[illegible]	.1[illegible]	-.[illegible]	.8[illegible]	.7[illegible]
9	.3478E+01	.2859E+01	.6[illegible]	.1[illegible]	.2[illegible]	.1[illegible]	.1[illegible]	.1[illegible]	-.[illegible]	.8[illegible]	.8[illegible]
10	.3519E+01	.2915E+01	.6[illegible]	.1[illegible]	.2[illegible]	.1[illegible]	.1[illegible]	.1[illegible]	-.[illegible]	.8[illegible]	.8[illegible]
11	.3508E+01	.2914E+01	.6[illegible]	.1[illegible]	.2[illegible]	.1[illegible]	.1[illegible]	.1[illegible]	-.[illegible]	.8[illegible]	.8[illegible]
12	.3485E+01	.2895E+01	.6[illegible]	.1[illegible]	.2[illegible]	.1[illegible]	.1[illegible]	.1[illegible]	-.[illegible]	.8[illegible]	.8[illegible]
13	.3419E+01	.2836E+01	.6[illegible]	.1[illegible]	.2[illegible]	.1[illegible]	.1[illegible]	.1[illegible]	-.[illegible]	.2[illegible]	.7[illegible]
14	.3339E+01	.2520E+01	.6[illegible]	.[illegible]	.2[illegible]	.1[illegible]	.1[illegible]	.1[illegible]	-.[illegible]	.1[illegible]	.7[illegible]
15	.3229E+01	.2[illegible]	.6[illegible]	.[illegible]	.2[illegible]	.1[illegible]	.1[illegible]	.1[illegible]	-.[illegible]	.1[illegible]	.7[illegible]
16	.3140E+01	.2225E+01	.6[illegible]	.[illegible]	.2[illegible]	.1[illegible]	.1[illegible]	.1[illegible]	-.[illegible]	.2[illegible]	.7[illegible]
17	.3091E+01	.2137E+01	.6[illegible]	.[illegible]	.2[illegible]	.1[illegible]	.1[illegible]	.1[illegible]	-.[illegible]	-.[illegible]	.6[illegible]
18	.2994E+01	.2[illegible]	.6[illegible]	.[illegible]	.1[illegible]	.1[illegible]	.1[illegible]	.1[illegible]	-.[illegible]	-.[illegible]	.6[illegible]
19	.2877E+01	.2[illegible]	.[illegible]	.[illegible]	.1[illegible]	.1[illegible]	.1[illegible]	.1[illegible]	-.[illegible]	-.[illegible]	.6[illegible]
20	.2818E+01	.2065E+01	.7[illegible]	.[illegible]	.1[illegible]	.1[illegible]	.1[illegible]	.1[illegible]	-.[illegible]	-.[illegible]	.5[illegible]
21	.2784E+01	.2041E+01	.7[illegible]	.[illegible]	.1[illegible]	.1[illegible]	.1[illegible]	.1[illegible]	-.[illegible]	-.[illegible]	.5[illegible]
22	.2765E+01	.2039E+01	.7[illegible]	.[illegible]	.1[illegible]	.1[illegible]	.1[illegible]	.1[illegible]	-.[illegible]	-.[illegible]	.5[illegible]
23	.2744E+01	.2022E+01	.7[illegible]	.[illegible]	.1[illegible]	.1[illegible]	.1[illegible]	.1[illegible]	-.[illegible]	-.[illegible]	.5[illegible]
24	.2718E+01	.2001E+01	.7[illegible]	.[illegible]	.1[illegible]	.1[illegible]	.1[illegible]	.1[illegible]	.5[illegible]	-.[illegible]	.5[illegible]
25	.2680E+01	.1986E+01	.7[illegible]	.[illegible]	.1[illegible]	.1[illegible]	.1[illegible]	.1[illegible]	-.[illegible]	-.[illegible]	.5[illegible]
26	.2654E+01	.1958E+01	.7[illegible]	.[illegible]	.1[illegible]	.1[illegible]	.1[illegible]	.1[illegible]	.[illegible]	-.[illegible]	.5[illegible]
27	.2611E+01	.1911E+01	.7[illegible]	.[illegible]	.1[illegible]	.1[illegible]	.1[illegible]	.1[illegible]	-.[illegible]	-.[illegible]	.5[illegible]
28	.2554E+01	.1868E+01	.7[illegible]	.[illegible]	.1[illegible]	.1[illegible]	.1[illegible]	.1[illegible]	-.[illegible]	-.[illegible]	.5[illegible]
29	.2488E+01	.1834E+01	.8[illegible]	.[illegible]	.1[illegible]	.1[illegible]	.1[illegible]	.1[illegible]	-.[illegible]	-.[illegible]	.4[illegible]
30	.2449E+01	.1808E+01	.7[illegible]	.[illegible]	.1[illegible]	.1[illegible]	.1[illegible]	.1[illegible]	-.[illegible]	-.[illegible]	.4[illegible]
31	.2449E+01	.1803E+01	.7[illegible]	.[illegible]	.1[illegible]	.1[illegible]	.1[illegible]	.1[illegible]	-.[illegible]	-.[illegible]	.4[illegible]
32	.2518E+01	.1825E+01	.7[illegible]	.[illegible]	.1[illegible]	.1[illegible]	.1[illegible]	.1[illegible]	-.[illegible]	-.[illegible]	.4[illegible]
33	.2670E+01	.1919E+01	.7[illegible]	.[illegible]	.1[illegible]	.1[illegible]	.1[illegible]	.1[illegible]	.7[illegible]	-.[illegible]	.5[illegible]
34	.2894E+01	.2035E+01	.7[illegible]	.[illegible]	.1[illegible]	.1[illegible]	.1[illegible]	.1[illegible]	.7[illegible]	.6[illegible]	.6[illegible]
35	.3116E+01	.2149E+01	.6[illegible]	.[illegible]	.2[illegible]	.1[illegible]	.1[illegible]	.1[illegible]	.7[illegible]	-.[illegible]	.6[illegible]
36	.3294E+01	.2241E+01	.6[illegible]	.[illegible]	.2[illegible]	.1[illegible]	.1[illegible]	.1[illegible]	.7[illegible]	-.[illegible]	.7[illegible]
37	.3375E+01	.2289E+01	.6[illegible]	.[illegible]	.2[illegible]	.1[illegible]	.1[illegible]	.1[illegible]	.7[illegible]	-.[illegible]	.7[illegible]
38	.3378E+01	.2277E+01	.6[illegible]	.6[illegible]	.2[illegible]	.1[illegible]	.1[illegible]	.1[illegible]	.7[illegible]	-.[illegible]	.7[illegible]
39	.3158E+01	.2150E+01	.8[illegible]	.[illegible]	.2[illegible]	.1[illegible]	.1[illegible]	.1[illegible]	.7[illegible]	-.[illegible]	.7[illegible]
40	.2891E+01	.2[illegible]	.8[illegible]	.[illegible]	.1[illegible]	.1[illegible]	.1[illegible]	.1[illegible]	.7[illegible]	.6[illegible]	.6[illegible]
41	.2555E+01	.1878E+01	.7[illegible]	.2[illegible]	.1[illegible]	.1[illegible]	.1[illegible]	.1[illegible]	.7[illegible]	.1[illegible]	.5[illegible]
42	.2217E+01	.1648E+01	.8[illegible]	.2[illegible]	.1[illegible]	.1[illegible]	.1[illegible]	.1[illegible]	.1[illegible]	.1[illegible]	.5[illegible]
43	.1855E+01	.1401E+01	.8[illegible]	.1[illegible]	.1[illegible]	.1[illegible]	.1[illegible]	.1[illegible]	.8[illegible]	.1[illegible]	.2[illegible]
44	.1587E+01	.1311E+01	.8[illegible]	.1[illegible]	.1[illegible]	.1[illegible]	.1[illegible]	.1[illegible]	.9[illegible]	.1[illegible]	.1[illegible]
45	.1405E+01	.1235E+01	.8[illegible]	.8[illegible]	.1[illegible]	.1[illegible]	.1[illegible]	.1[illegible]	.8[illegible]	.5[illegible]	.1[illegible]
46	.1406E+01	.1234E+01	.8[illegible]	.8[illegible]	.1[illegible]	.1[illegible]	.1[illegible]	.1[illegible]	.8[illegible]	.7[illegible]	.1[illegible]

IST	ARCONIRN	X	Y	DP1/DT	DP1/DX	DP1/DY	DETA/DT	DETA/DX	DETA/DY	ETA1INF
1	.9339E+01	.1705E+01	.3500E+01	0.	-.[illegible]	[illegible]		[illegible]	[illegible]	.1[illegible]
2	.4018E+01	.1[illegible]	.3[illegible]	.7[illegible]	-.[illegible]	.[illegible]	.[illegible]	.[illegible]	-.[illegible]	.1[illegible]
3	.7554E+01	.1[illegible]	.3[illegible]	.[illegible]	-.[illegible]	.[illegible]	.[illegible]	.[illegible]	.[illegible]	.1[illegible]
4	.1088E+02	.1[illegible]	.3[illegible]	.[illegible]	.[illegible]	.[illegible]	.[illegible]	.[illegible]	.[illegible]	.1[illegible]
5	.1455E+02	.9[illegible]	.3[illegible]	.1[illegible]	-.[illegible]	.[illegible]	.[illegible]	.[illegible]	.[illegible]	.1[illegible]
6	.2372E+02	.8[illegible]	.3[illegible]	.[illegible]	.[illegible]	.[illegible]	.[illegible]	.[illegible]	-.[illegible]	.1[illegible]
7	.4550E+02	.7[illegible]	.3[illegible]	.[illegible]	.[illegible]	.[illegible]	.[illegible]	.[illegible]	-.[illegible]	.1[illegible]
8	.6629E+02	.7[illegible]	.3[illegible]	.[illegible]	.[illegible]	.[illegible]	.[illegible]	.[illegible]	.[illegible]	.1[illegible]

9	.7336E+02	.7191E+01	.3[illegible]+01	.1[illegible]-01	-.[illegible]+01	-.1[illegible]+01	-.1[illegible]	.5[illegible]+01	-.1[illegible]+02	.1[illegible]+01
10	.7340E+02	.7055E+01	.31[illegible]+01	.1[illegible]-01	-.[illegible]+01	-.6[illegible]+00	.1[illegible]	.5[illegible]+01	-.1[illegible]+02	.1[illegible]+01
11	.7091E+02	.6988E+01	.31[illegible]+01	.1[illegible]-01	-.[illegible]+01	.[illegible]	.[illegible]	.[illegible]+01	-.1[illegible]+02	.1[illegible]+01
12	.6854E+02	.6743E+01	.30[illegible]+01	.1[illegible]-01	-.[illegible]+01	.[illegible]	.[illegible]	.[illegible]+01	-.9[illegible]+01	.1[illegible]+01
13	.6699E+02	.6604E+01	.29[illegible]+01	.1[illegible]-01	-.[illegible]+01	.[illegible]	.[illegible]	.[illegible]+01	-.9[illegible]+01	.1[illegible]+01
14	.6653E+02	.6469E+01	.28[illegible]+01	.1[illegible]-01	-.[illegible]+01	.[illegible]	.[illegible]	.[illegible]+01	-.8[illegible]+01	.1[illegible]+01
15	.6936E+02	.6794E+01	.29[illegible]+01	.1[illegible]-01	-.[illegible]+01	.[illegible]	.[illegible]	.[illegible]+01	-.8[illegible]+01	.1[illegible]+01
16	.7488E+02	.6[illegible]+01	.29[illegible]+01	.1[illegible]-01	-.[illegible]+01	.[illegible]	.[illegible]	.[illegible]+01	-.8[illegible]+01	.1[illegible]+01
17	.8[illegible]	.[illegible]+01	.28[illegible]+01	.1[illegible]-01	-.[illegible]+01	.[illegible]	.[illegible]	.[illegible]+01	-.8[illegible]+01	.1[illegible]+01
18	.971[illegible]	.[illegible]+01	.[illegible]+01	.[illegible]-01	-.[illegible]+01	.[illegible]	.[illegible]	.[illegible]+01	-.8[illegible]+01	.1[illegible]+01
19	.1085E+03	.5964E+01	.28[illegible]+01	.1[illegible]-01	-.1[illegible]+01	.[illegible]+01	.1[illegible]	.1[illegible]+01	-.8[illegible]+01	.1[illegible]+01
20	.1134E+03	.5861E+01	.27[illegible]+01	.1[illegible]-01	-.1[illegible]+01	.[illegible]+01	.1[illegible]	.5[illegible]	-.8[illegible]+01	.1[illegible]+01
21	.1166E+03	.5784E+01	.28[illegible]+01	.1[illegible]-01	.1[illegible]+01	.1[illegible]+01	.1[illegible]	-.8[illegible]	-.8[illegible]+01	.1[illegible]+01
22	.1149E+03	.5711E+01	.28[illegible]+01	.1[illegible]-01	.9[illegible]+01	.1[illegible]+01	.1[illegible]	-.2[illegible]+01	-.7[illegible]+01	.1[illegible]+01
23	.1111E+03	.5650E+01	.28[illegible]+01	.1[illegible]-01	-.7[illegible]+01	.1[illegible]+02	.1[illegible]	-.3[illegible]+01	-.6[illegible]+01	.1[illegible]+01
24	.1054E+03	.5591E+01	.26[illegible]+01	.1[illegible]-01	-.4[illegible]+01	.1[illegible]+02	.[illegible]	-.4[illegible]+01	-.5[illegible]+01	.1[illegible]+01
25	.9925E+02	.5534E+01	.24[illegible]+01	.1[illegible]-01	-.2[illegible]+01	.1[illegible]+02	.[illegible]	-.5[illegible]+01	-.4[illegible]+01	.1[illegible]+01
26	.9245E+02	.5503E+01	.30[illegible]+01	.2[illegible]-01	-.2[illegible]+01	.1[illegible]+02	.[illegible]	-.5[illegible]+01	-.2[illegible]+01	.1[illegible]+01
27	.8629E+02	.5478E+01	.30[illegible]+01	.3[illegible]-01	.1[illegible]+01	.1[illegible]+02	.[illegible]	-.5[illegible]+01	-.1[illegible]+01	.1[illegible]+01
28	.8401E+02	.5474E+01	.31[illegible]+01	.4[illegible]-01	.3[illegible]+01	.1[illegible]+02	.[illegible]	-.5[illegible]+01	.1[illegible]+01	.1[illegible]+01
29	.7877E+02	.5504E+01	.32[illegible]+01	.6[illegible]-01	.4[illegible]+01	.1[illegible]+02	.[illegible]	-.4[illegible]+01	.2[illegible]+01	.1[illegible]+01
30	.7646E+02	.5746E+01	.32[illegible]+01	.9[illegible]-01	.6[illegible]+01	.1[illegible]+02	.[illegible]	-.4[illegible]+01	.3[illegible]+01	.1[illegible]+01
31	.7330E+02	.5559E+01	.33[illegible]+01	.1[illegible]-01	.7[illegible]+01	.1[illegible]+02	.1[illegible]	-.3[illegible]+01	.4[illegible]+01	.1[illegible]+01
32	.6951E+02	.5663E+01	.33[illegible]+01	.1[illegible]-01	.9[illegible]+01	.1[illegible]+02	.1[illegible]	-.2[illegible]+01	.4[illegible]+01	.1[illegible]+01
33	.6498E+02	.5735E+01	.34[illegible]+01	.8[illegible]-01	.1[illegible]+02	.7[illegible]+01	.1[illegible]	-.1[illegible]+01	.5[illegible]+01	.1[illegible]+01
34	.6010E+02	.5816E+01	.34[illegible]+01	.7[illegible]-01	.1[illegible]+02	.5[illegible]+01	.1[illegible]	-.9[illegible]+00	.5[illegible]+01	.1[illegible]+01
35	.5139E+02	.5910E+01	.34[illegible]+01	.6[illegible]-01	.9[illegible]+01	.3[illegible]+01	.2[illegible]	-.1[illegible]+01	.4[illegible]+01	.1[illegible]+01
36	.4336E+02	.6006E+01	.34[illegible]+01	.2[illegible]-01	.8[illegible]+01	.1[illegible]+01	.2[illegible]	-.2[illegible]+01	.4[illegible]+01	.1[illegible]+01
37	.3609E+02	.6137E+01	.35[illegible]+01	.9[illegible]-01	.7[illegible]+01	.[illegible]+01	.2[illegible]	-.1[illegible]+01	.4[illegible]+01	.1[illegible]+01
38	.2988E+02	.6276E+01	.35[illegible]+01	.1[illegible]-01	.6[illegible]+01	.1[illegible]+01	.2[illegible]	-.1[illegible]+01	.4[illegible]+01	.1[illegible]+01
39	.2481E+02	.6499E+01	.36[illegible]+01	.1[illegible]-01	.5[illegible]+01	.[illegible]+01	.2[illegible]	-.[illegible]+01	.4[illegible]+01	.1[illegible]+01
40	.1929E+02	.6663E+01	.37[illegible]+01	.1[illegible]-01	.9[illegible]+01	-.5[illegible]	.3[illegible]	-.1[illegible]+01	.4[illegible]+01	.1[illegible]+01
41	.1680E+02	.6911E+01	.38[illegible]+01	.9[illegible]-01	.3[illegible]+01	-.8[illegible]	.4[illegible]	-.9[illegible]	.4[illegible]+01	.1[illegible]+01
42	.1262E+02	.7211E+01	.38[illegible]+01	.9[illegible]-01	.2[illegible]+01	-.1[illegible]+01	.8[illegible]	-.6[illegible]	.4[illegible]+01	.1[illegible]+01
43	.9950E+01	.7688E+01	.39[illegible]+01	.1[illegible]-01	.2[illegible]+01	-.8[illegible]	.8[illegible]	-.5[illegible]	.4[illegible]+01	.1[illegible]+01
44	.7505E+01	.8231E+01	.38[illegible]+01	.1[illegible]-01	.1[illegible]+01	-.8[illegible]	.[illegible]	-.1[illegible]	.5[illegible]+01	.1[illegible]+01
45	.5408E+01	.9164E+01	.39[illegible]+01	.1[illegible]-01	.9[illegible]	-.9[illegible]	.[illegible]	-.2[illegible]	.5[illegible]+01	.1[illegible]+01
46	.3918E+01	.1094E+02	.398[illegible]+01	0.	.7[illegible]	0.	0.	-.9[illegible]	.5[illegible]+01	.1[illegible]+01

SECOND INDEX= 7

1ST	P/P1INF	RHO/RHOINF	U/Q1INF	V/Q1INF	ET/ET1INF	S/S1INF	MT/MT1INF	MACH	UBAR/Q1INF	VBAR/Q1INF	CP
1	.2505E+01	.1888E+01	.795[illegible]+00	-.[illegible]E-01	.1[illegible]+01	.[illegible]+01	.[illegible]+01	.1[illegible]+01	-.795[illegible]+00	.1[illegible]-01	.4923E+00
2	.2500E+01	.1888[illegible]+01	.795[illegible]+00	-.1[illegible]-01	.1[illegible]+01	.[illegible]+01	.[illegible]+01	.1[illegible]+01	-.799[illegible]+00	.1[illegible]-01	.4926E+00
3	.2[illegible]	.1[illegible]+01	.79[illegible]+00	-.1[illegible]-01	.1[illegible]+01	.[illegible]+01	.[illegible]+01	.1[illegible]+01	-.79[illegible]+00	.[illegible]-01	.5[illegible]+00
4	.2[illegible]+01	.1[illegible]+01	.78[illegible]+00	-.2[illegible]-01	.1[illegible]+01	.[illegible]+01	.[illegible]+01	.1[illegible]+01	-.78[illegible]+00	-.3[illegible]-02	.5[illegible]+00
5	.2[illegible]+01	.2[illegible]+01	.771[illegible]+00	-.[illegible]-01	.1[illegible]+01	.[illegible]+01	.[illegible]+01	.1[illegible]+01	-.773[illegible]+00	-.1[illegible]-01	.6[illegible]+00
6	.3[illegible]+01	.2[illegible]+01	.75[illegible]+00	-.[illegible]-01	.[illegible]+01	.[illegible]+01	.[illegible]+01	.1[illegible]+01	-.76[illegible]+00	-.1[illegible]-01	.6[illegible]+00
7	.3[illegible]+01	.2[illegible]+01	.73[illegible]+00	-.[illegible]-01	.2[illegible]+01	.[illegible]+01	.[illegible]+01	.1[illegible]+01	-.72[illegible]+00	.3[illegible]-01	.7[illegible]+00
8	.3[illegible]+01	.2[illegible]+01	.719[illegible]+00	.1[illegible]-01	.2[illegible]+01	.[illegible]+01	.[illegible]+01	.1[illegible]+01	-.70[illegible]+00	.1[illegible]-01	.7[illegible]+00
9	.3[illegible]+01	.2[illegible]+01	.70[illegible]+00	.1[illegible]-01	.2[illegible]+01	.[illegible]+01	.[illegible]+01	.1[illegible]+01	-.72[illegible]+00	.1[illegible]-01	.7[illegible]+00
10	.3[illegible]+01	.2[illegible]+01	.69[illegible]+00	.1[illegible]-01	.2[illegible]+01	.[illegible]+01	.[illegible]+01	.1[illegible]+01	-.69[illegible]+00	.[illegible]-02	.7[illegible]+00
11	.3[illegible]+01	.2[illegible]+01	.69[illegible]+00	.1[illegible]-01	.2[illegible]+01	.[illegible]+01	.[illegible]+01	.1[illegible]+01	-.73[illegible]+00	.6[illegible]-01	.7[illegible]+00
12	.3[illegible]+01	.2[illegible]+01	.69[illegible]+00	.1[illegible]-01	.2[illegible]+01	.[illegible]+01	.[illegible]+01	.1[illegible]+01	-.73[illegible]+00	.5[illegible]-01	.7[illegible]+00
13	.3[illegible]+01	.2[illegible]+01	.69[illegible]+00	.2[illegible]-01	.2[illegible]+01	.[illegible]+01	.[illegible]+01	.1[illegible]+01	-.74[illegible]+00	.4[illegible]-01	.7[illegible]+00
14	.3[illegible]+01	.2[illegible]+01	.69[illegible]+00	.2[illegible]-01	.2[illegible]+01	.[illegible]+01	.[illegible]+01	.1[illegible]+01	-.74[illegible]+00	.3[illegible]-01	.7[illegible]+00
15	.3[illegible]+01	.2[illegible]+01	.69[illegible]+00	.[illegible]-01	.2[illegible]+01	.[illegible]+01	.[illegible]+01	.1[illegible]+01	-.75[illegible]+00	.2[illegible]-01	.6[illegible]+00
16	.3[illegible]+01	.2[illegible]+01	.70[illegible]+00	.[illegible]-01	.2[illegible]+01	.[illegible]+01	.[illegible]+01	.1[illegible]+01	-.74[illegible]+00	.2[illegible]-01	.6[illegible]+00
17	.2[illegible]+01	.2[illegible]+01	.70[illegible]+00	.[illegible]-01	.2[illegible]+01	.[illegible]+01	.[illegible]+01	.1[illegible]+01	-.69[illegible]+00	.1[illegible]-01	.6[illegible]+00
18	.2[illegible]+01	.2[illegible]+01	.71[illegible]+00	.[illegible]-01	.1[illegible]+01	.[illegible]+01	.[illegible]+01	.1[illegible]+01	-.69[illegible]+00	.[illegible]-01	.6[illegible]+00
19	.2[illegible]+01	.2[illegible]+01	.71[illegible]+00	.[illegible]-01	.1[illegible]+01	.[illegible]+01	.[illegible]+01	.1[illegible]+01	-.67[illegible]+00	-.2[illegible]-01	.6[illegible]+00
20	.2[illegible]+01	.2[illegible]+01	.72[illegible]+00	.[illegible]-01	.1[illegible]+01	.[illegible]+01	.[illegible]+01	.1[illegible]+01	-.65[illegible]+00	-.3[illegible]-01	.6[illegible]+00
21	.2[illegible]+01	.2[illegible]+01	.73[illegible]+00	.[illegible]-01	.1[illegible]+01	.[illegible]+01	.[illegible]+01	.1[illegible]+01	-.64[illegible]+00	-.4[illegible]-01	.6[illegible]+00
22	.2[illegible]+01	.2[illegible]+01	.73[illegible]+00	.[illegible]-01	.1[illegible]+01	.[illegible]+01	.[illegible]+01	.1[illegible]+01	-.63[illegible]+00	-.4[illegible]-01	.6[illegible]+00
23	.2[illegible]+01	.2[illegible]+01	.73[illegible]+00	.[illegible]-01	.1[illegible]+01	.[illegible]+01	.[illegible]+01	.1[illegible]+01	-.63[illegible]+00	-.4[illegible]-01	.6[illegible]+00
24	.2[illegible]+01	.2[illegible]+01	.73[illegible]+00	.[illegible]-01	.1[illegible]+01	.[illegible]+01	.[illegible]+01	.1[illegible]+01	-.63[illegible]+00	-.4[illegible]-01	.6[illegible]+00
25	.2[illegible]+01	.2[illegible]+01	.73[illegible]+00	.[illegible]-01	.1[illegible]+01	.[illegible]+01	.[illegible]+01	.1[illegible]+01	-.63[illegible]+00	-.4[illegible]-01	.6[illegible]+00
26	.2[illegible]+01	.1[illegible]+01	.7[illegible]+00	.[illegible]-01	.1[illegible]+01	.[illegible]+01	.[illegible]+01	.1[illegible]+01	-.63[illegible]+00	-.4[illegible]-01	.6[illegible]+00

27	.2686E+01	.1963E+01	.7215E+00	[illegible]	.1814E+01	.1095E+01	[illegible]	.1339E+01	.2929E+00	-.7675E+00	.5512E+00
28	.2653E+01	.1928E+01	.7167E+00	[illegible]	.1777E+01	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
29	.2547E+01	.1873E+01	.7214E+00	[illegible]	.1778E+01	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
30	.2509E+01	.1853E+01	.7081E+00	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
31	.2466E+01	.1805E+01	.7348E+00	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
32	.2466E+01	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
33	.2528E+01	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
34	.2635E+01	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
35	.2778E+01	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
36	.2911E+01	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
37	.2995E+01	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
38	.3005E+01	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
39	.2918E+01	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
40	.2743E+01	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
41	.2508E+01	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
42	.2217E+01	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
43	.1935E+01	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
44	.1713E+01	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
45	.1607E+01	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
46	.1603E+01	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

IST	JACOBIAN	X	Y	DXI/DT	DXI/DX	DXI/DY	DETA/DX	DETA/DY	EI/EIINF
1	.3526E+02	.1766E+02	.3331E+01	0.	.2879E+00	.2609E-12	0.	-.6496E-02	-.1218E+02	.1357E+01
2	.4876E+01	.1405E+02	.3514E+01	.9077E-04	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
3	.6142E+01	.1208E+02	.3315E+01	.6777E-04	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
4	.8839E+01	.1006E+02	.3316E+01	.9194E-04	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
5	.1375E+02	.8035E+01	.3317E+01	.2199E-04	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
6	.1896E+02	.6198E+01	.3312E+01	.1241E-04	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
7	.3310E+02	.4649E+01	.3309E+01	.5588E-05	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
8	.4613E+02	.3900E+01	.3197E+01	.3664E-05	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
9	.5293E+02	.3212E+01	.3125E+01	.2359E-05	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
10	.5284E+02	.2099E+01	.3068E+01	.2228E-05	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
11	.5090E+02	.1889E+01	.3019E+01	.2935E-05	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
12	.4920E+02	.1729E+01	.2967E+01	.2691E-05	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
13	.4829E+02	.1581E+01	.2910E+01	.2987E-05	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
14	.4856E+02	.1438E+01	.2856E+01	.3294E-05	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
15	.5114E+02	.1305E+01	.2810E+01	.3350E-05	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
16	.5518E+02	.1179E+01	.2761E+01	.3316E-05	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
17	.6093E+02	.1064E+01	.2720E+01	.2939E-05	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
18	.6366E+02	.9949E+01	.2674E+01	.2855E-05	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
19	.6499E+02	.9259E+01	.2630E+01	.2844E-05	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
20	.6531E+02	.8734E+01	.2589E+01	.2911E-05	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
21	.6491E+02	.8263E+01	.2550E+01	.2978E-05	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
22	.6495E+02	.7845E+01	.2515E+01	.3064E-05	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
23	.6599E+02	.7468E+01	.2478E+01	.2987E-05	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
24	.6.3E+02	.7139E+01	.2451E+01	.2980E-05	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
25	.6916E+02	.6840E+01	.2423E+01	.2958E-05	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
26	.6988E+02	.6598E+01	.2398E+01	.2972E-05	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
27	.7004E+02	.6278E+01	.2376E+01	.2987E-05	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
28	.7018E+02	.6076E+01	.2356E+01	.3004E-05	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
29	.7064E+02	.5899E+01	.2342E+01	.3022E-05	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
30	.7058E+02	.5744E+01	.2326E+01	.3047E-05	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
31	.7067E+02	.5610E+01	.2315E+01	.3066E-05	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
32	.7060E+02	.5490E+01	.2315E+01	.3151E-05	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
33	.7033E+02	.5384E+01	.2305E+01	.3621E-05	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
34	.7016E+02	.5269E+01	.2294E+01	.4160E-05	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
35	.7065E+02	.5178E+01	.2277E+01	.4664E-05	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
36	.7149E+02	.5095E+01	.2273E+01	.4777E-05	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
37	.7135E+02	.4988E+01	.2269E+01	.4951E-05	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
38	.7151E+02	.4925E+01	.2258E+01	.5003E-05	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
39	.7122E+02	.4844E+01	.2251E+01	.4951E-05	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
40	.7102E+02	.4768E+01	.2247E+01	.4909E-05	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
41	.8759E+01	.4704E+01	.2240E+01	.4775E-05	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
42	.6694E+01	.4650E+01	.2239E+01	.4671E-05	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
43	.5297E+01	.4598E+01	.2238E+01	.4614E-05	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
44	.4356E+01	.4553E+01	.2234E+01	.4620E-05	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
45	.3594E+01	.4514E+01	.2231E+01	.4694E-05	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

48	.2773E+01	.1042E+02	.9[illegible]E+01	0.		.7714E+00	0.	0.		-.1218E+00	.31[illegible]E+01	.1250E+01	

SECOND INDEX= 8

IST	P/P1N	RHO/RHO1N	U/U1N	V/U1N	ET/E1N	S/S1N	MI/MI1N	PHI	LBAR/Q2N	VBAR/Q2N	CP
1	.2493E+01	.1866E+01	.7978E+00	-.1[illegible]E-01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.7978E+00	.1[illegible]E-01	.4895E+00
2	.2496E+01	.1869E+01	.7971E+00	-.1[illegible]E-02	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.7964E+00	.1[illegible]E-01	.4[illegible]E+00
3	.2555E+01	.1914E+01	.7954E+00	-.1[illegible]E-03	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.7944E+00	.[illegible]E-01	.4[illegible]E+00
4	.2644E+01	.1974E+01	.7878E+00	-.1[illegible]E-[illegible]	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.7[illegible]E+00	-.[illegible]E+00	.5[illegible]E+00
5	.2821E+01	.2095E+01	.7754E+00	.1[illegible]E-01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.7[illegible]E+00	-.1[illegible]E-01	.5[illegible]E+00
6	.2986E+01	.2215E+01	.7[illegible]E+00	.[illegible]E-01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.7[illegible]E+00	-.1[illegible]E-01	.6[illegible]E+00
7	.3151E+01	.2331E+01	.7[illegible]E+00	.[illegible]E-01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.7[illegible]E+00	.[illegible]E-01	.6[illegible]E+00
8	.3[illegible]E+01	.2[illegible]E+01	.[illegible]E+00	.[illegible]E-01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.7[illegible]E+00	.[illegible]E-01	.6[illegible]E+00
9	.3[illegible]E+01	.2[illegible]E+01	.7[illegible]E+00	.1[illegible]E-01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.7[illegible]E+00	.1[illegible]E-01	.6[illegible]E+00
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IST	MACH1N	X	Y	DX1/T	DX1/X	DY1/Y	DY1/T	DX1/X	DX1/Y	DY1/Y
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Best Available Copy

16	.4038E+02	.6065E+01	.2561E+01	.3960E-05	-.8[illegible]E+01	.6440E+01	-.657[illegible]E-06	.1665E+01	-.6032E+01	.1378E+01
17	.4127E+02	.5919E+01	.2554E+01	.3710E-05	-.8174E+01	.6027E+01	-.1174E-05	.1[illegible]E+00	-.5952E+01	.1375E+01
18	.4050E+02	.5777E+01	.2517E+01	.3674E-05	-.7986E+01	.9195E+01	-.1[illegible]E-05	.1[illegible]E+00	-.5868E+01	.1372E+01
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20	.3842E+02	.5500E+01	.2554E+01	.3771E-05	-.5335E+01	.1[illegible]E+01	-.1[illegible]E-05	-.1[illegible]E+01	-.4955E+01	.1375E+01
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24	.2804E+02	.5011E+01	.2774E+01	.5[illegible]E-05	-.2[illegible]E+01	.9[illegible]E+01	.1[illegible]E-05	-.2[illegible]E+01	-.1[illegible]E+01	.1367E+01
25	.2681E+02	.5040E+01	.2885E+01	.6[illegible]E-05	-.1[illegible]E+01	.9[illegible]E+01	.9[illegible]E-06	-.2[illegible]E+01	-.1[illegible]E+01	.1354E+01
26	.2499E+02	.4994E+01	.2[illegible]E+01	.1[illegible]E-05	-.1[illegible]E+01	.9[illegible]E+01	.5[illegible]E-06	-.2[illegible]E+01	-.1[illegible]E+01	.1359E+01
27	.2312E+02	.4956E+01	.3[illegible]E+01	.7[illegible]E-06	-.9[illegible]E+00	.8[illegible]E+01	.1[illegible]E-05	-.2[illegible]E+01	-.5[illegible]E+00	.1357E+01
28	.2157E+02	.4943E+01	.3[illegible]E+01	.9[illegible]E-06	.2[illegible]E 01	.8[illegible]E+01	.[illegible]E-06	-.2[illegible]E+01	.1[illegible]E+00	.1356E+01
29	.2050E+02	.4937E+01	.3[illegible]E+01	.2[illegible]E-05	.6[illegible]E+00	.8[illegible]E+01	.6[illegible]E-06	-.2[illegible]E+01	.8[illegible]E+00	.1356E+01
30	.1926E+02	.5026E+01	.3945E+01	.6[illegible]E-05	.1[illegible]E+01	.7[illegible]E+01	.1[illegible]E-05	-.2[illegible]E+01	.1153E+01	.1355E+01
31	.1797E+02	.5021E+01	.3577E+01	.1[illegible]E-04	.1[illegible]E+01	.7[illegible]E+01	.1[illegible]E-04	-.2[illegible]E+01	.1440E+01	.1352E+01
32	.1670E+02	.5180E+01	.3627E+01	.1[illegible]E-04	.2[illegible]E+01	.6[illegible]E+01	.1[illegible]E-04	-.1[illegible]E+01	.1673E+01	.1350E+01
33	.1541E+02	.5300E+01	.3601E+01	.1[illegible]E-04	.3[illegible]E+01	.5[illegible]E+01	.1[illegible]E-04	-.1[illegible]E+01	.1905E+01	.1350E+01
34	.1417E+02	.5935E+01	.3864E+01	.2[illegible]E-04	.3[illegible]E+01	.5[illegible]E+01	.1[illegible]E-04	-.1[illegible]E+01	.2111E+01	.1367E+01
35	.1.97E+02	.5579E+01	.3974E+01	.2[illegible]E-04	.4[illegible]E+01	.4[illegible]E+01	.1[illegible]E-04	-.1[illegible]E+01	.1970E+01	.1386E+01
36	.1098E+02	.5792E+01	.4077E+01	.2[illegible]E-04	.4[illegible]E+01	.3[illegible]E+01	.8[illegible]E-05	-.1[illegible]E+01	.1810E+01	.1394E+01
37	.9560E+01	.5926E+01	.4110E+01	.3[illegible]E-04	.4[illegible]E+01	.2[illegible]E+01	.5[illegible]E-05	-.7[illegible]E+00	.1868E+01	.1414E+01
38	.7979E+01	.6135E+01	.4264E+01	.3[illegible]E-04	.5[illegible]E+01	.1[illegible]E+01	.4[illegible]E-05	-.8[illegible]E+00	.1711E+01	.1430E+01
39	.6543E+01	.6355E+01	.4386E+01	.3[illegible]E-04	.5[illegible]E+01	.1[illegible]E+01	.9[illegible]E-05	-.8[illegible]E+00	.1624E+01	.1414E+01
40	.5510E+01	.6629E+01	.4560E+01	.3[illegible]E-04	.5[illegible]E+01	.8[illegible]E+00	.1[illegible]E-05	-.9[illegible]E+00	.1714E+01	.1406E+01
41	.4725E+01	.6975E+01	.4651E+01	.3[illegible]E-04	.2[illegible]E+01	.3[illegible]E+00	.5[illegible]E-05	-.1[illegible]E+00	.1777E+01	.1378E+01
42	.3687E+01	.7381E+01	.4956E+01	.3[illegible]E-04	.2[illegible]E+01	.1[illegible]E+01	.1[illegible]E-04	-.1[illegible]E+00	.1687E+01	.1347E+01
43	.3070E+01	.7898E+01	.4838E+01	.2[illegible]E-04	.1[illegible]E+01	-.1[illegible]E+00	.2[illegible]E-04	.7[illegible]E-01	.1720E+01	.1313E+01
44	.2[illegible]E+01	.8504E+01	.4519E+01	.2[illegible]E-04	.1[illegible]E+01	-.5[illegible]E+00	-.1[illegible]E-04	.1[illegible]E+00	.1504E+01	.1285E+01
45	.2477E+01	.9[illegible]E+01	.4[illegible]E+01	.2[illegible]E-04	.1[illegible]E+01	-.2[illegible]E+00	.5[illegible]E-04	-.3[illegible]E-01	.2376E+01	.1264E+01
46	.2093E+01	.1042E+02	.4564E+01	0.	.8[illegible]E+00	.1[illegible]E+00		-.1[illegible]E+00	.2458E+01	.1264E+01

SECOND INDEX= 9

1ST	P/P1NF	RHO/RH1NF	U/Q1NF	V/Q1NF	T1/T1NF	S/S1NF	HT/HT1NF	MACH	UBAR/Q1NF	VBAR/Q1NF	CP
1	.2485E+01	.1865E+01	.8015E+00	.1[illegible]E-01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.8015E+00	.1[illegible]E-01	.4858E+00
2	.2486E+01	.1885E+01	.8014E+00	-.1[illegible]E-01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.8[illegible]E+00	.1[illegible]E-01	.4860E+00
3	.2534E+01	.1904E+01	.7988E+00	-.1[illegible]E-01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.7988E+00	.8[illegible]E-02	.5017E+00
4	.2634E+01	.1955E+01	.7923E+00	-.5[illegible]E-02	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.7927E+00	-.4355E-02	.5399E+00
5	.2770E+01	.2024E+01	.7815E+00	.1[illegible]E-01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.7814E+00	-.7167E-02	.5790E+00
6	.2919E+01	.2103E+01	.7675E+00	.4[illegible]E-01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.7659E+00	-.4[illegible]E-01	.6264E+00
7	.3034E+01	.2186E+01	.7544E+00	.7[illegible]E-01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.7497E+00	.5[illegible]E-01	.6651E+00
8	.3103E+01	.2243E+01	.7377E+00	.1[illegible]E-01	.2[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.7364E+00	.1[illegible]E+00	.6873E+00
9	.3114E+01	.2274E+01	.7260E+00	.1942E+00	.2[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.8[illegible]E+00	.1977E+00	.6915E+00
10	.3084E+01	.2270E+01	.7187E+00	.1[illegible]E+00	.2[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.8[illegible]E+00	.1771E+00	.6861E+00
11	.3035E+01	.2236E+01	.7154E+00	.1[illegible]E+00	.2[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.8[illegible]E+00	.1614E+00	.6849E+00
12	.2978E+01	.2194E+01	.7149E+00	.2[illegible]E+00	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.8[illegible]E+00	.1354E+00	.6840E+00
13	.2953E+01	.2162E+01	.7166E+00	.2[illegible]E+00	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.8[illegible]E+00	.1[illegible]E-01	.6[illegible]E+00
14	.2960E+01	.2115E+01	.7181E+00	.2[illegible]E+00	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.7[illegible]E+00	.2[illegible]E-01	.6[illegible]E+00
15	.2895E+01	.2104E+01	.7[illegible]E+00	.2[illegible]E+00	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.6[illegible]E+00	-.1[illegible]E+00	.6147E+00
16	.2899E+01	.2111E+01	.7[illegible]E+00	.2[illegible]E+00	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.5[illegible]E+00	-.2[illegible]E+00	.6[illegible]E+00
17	.2907E+01	.2117E+01	.7[illegible]E+00	.2[illegible]E+00	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.5[illegible]E+00	-.2[illegible]E+00	.6[illegible]E+00
18	.2916E+01	.2118E+01	.7[illegible]E+00	.2[illegible]E+00	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.5[illegible]E+00	-.2[illegible]E+00	.6[illegible]E+00
19	.2913E+01	.2117E+01	.7[illegible]E+00	.2[illegible]E+00	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.1[illegible]E+00	-.1[illegible]E+00	.6[illegible]E+00
20	.2869E+01	.2104E+01	.7227E+00	.2535E+00	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.1[illegible]E+00	.6[illegible]E+00	.6[illegible]E+00
21	.2880E+01	.2094E+01	.7[illegible]E+00	.2[illegible]E+00	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.7[illegible]E-01	-.3[illegible]E+00	.6[illegible]E+00
22	.2861E+01	.2093E+01	.7[illegible]E+00	.2[illegible]E+00	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.5[illegible]E-01	-.3[illegible]E+00	.6[illegible]E+00
23	.2751E+01	.2[illegible]E+01	.7[illegible]E+00	.2[illegible]E+00	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.3[illegible]E-01	-.3[illegible]E+00	.5[illegible]E+00
24	.2691E+01	.1[illegible]E+01	.7[illegible]E+00	.1[illegible]E+00	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.2[illegible]E-01	-.3[illegible]E+00	.5[illegible]E+00
25	.2624E+01	.1951E+01	.7551E+00	.1[illegible]E+00	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.1[illegible]E-02	-.3[illegible]E+00	.5511E+00
26	.2556E+01	.1908E+01	.7335E+00	.1[illegible]E+00	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E-02	-.2[illegible]E+00	.5[illegible]E+00
27	.2490E+01	.1864E+01	.7304E+00	.1[illegible]E+00	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.2[illegible]E-01	-.1[illegible]E+00	.4987E+00
28	.2466E+01	.1834E+01	.7378E+00	.1[illegible]E+00	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.4[illegible]E-01	-.1[illegible]E+00	.4966E+00
29	.2360E+01	.1775E+01	.7[illegible]E+00	.1[illegible]E+00	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.6[illegible]E-01	-.7[illegible]E+00	.4995E+00
30	.2298E+01	.1728E+01	.7[illegible]E+00	.1[illegible]E+00	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+00	-.7[illegible]E+00	.4[illegible]E+00
31	.2231E+01	.1688E+01	.7[illegible]E+00	.1[illegible]E+00	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+00	-.6[illegible]E+00	.4[illegible]E+00
32	.2164E+01	.1640E+01	.7[illegible]E+00	.1[illegible]E+00	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.2[illegible]E+00	-.6[illegible]E+00	.3[illegible]E+00
33	.2115E+01	.1605E+01	.7705E+00	.1[illegible]E+00	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.3076E+00	-.5[illegible]E+00	.3[illegible]E+00

34	.2082E+01	.1580E+01	.7676E+00	.1062E+00	.1454E+01	.1078E+01	.9854E+00	.1411E+01	.3894E+00	-.5093E+00	.3540E+00
35	.2074E+01	.1567E+01	.7585E+00	.9[illegible]E-01	.1443E+01	.1104E+01	.5798E+00	.1[illegible]E+01	.4496E+00	-.4712E+00	.3513E+00
36	.2093E+01	.1566E+01	.7456E+00	.1031E+00	.1442E+01	.1127E+01	.9742E+00	.1[illegible]E+01	.5076E+00	-.4106E+00	.3574E+00
37	.2131E+01	.1580E+01	.7352E+00	.1174E+00	.1453E+01	.1149E+01	.9763E+00	.1[illegible]E+01	.5843E+00	-.3025E+00	.3699E+00
38	.2173E+01	.1596E+01	.7247E+00	.1184E+00	.1465E+01	.1164E+01	.9[illegible]E+00	.1[illegible]E+01	.6279E+00	-.2[illegible]E+00	.3855E+00
39	.2203E+01	.1610E+01	.7207E+00	.1163E+00	.1480E+01	.1178E+01	.9[illegible]E+00	.1[illegible]E+01	.6744E+00	-.2[illegible]E+00	.3955E+00
40	.2203E+01	.1611E+01	.7155E+00	.1185E+00	.1500E+01	.1195E+01	.9[illegible]E+00	.1[illegible]E+01	.7529E+00	-.2[illegible]E+01	.3955E+00
41	.2160E+01	.1593E+01	.7155E+00	.1094E+00	.1503E+01	.1178E+01	.1[illegible]E+01	.1[illegible]E+01	.7960E+00	.9560E-01	.3795E+00
42	.2073E+01	.1547E+01	.7755E+00	.1001E+00	.1478E+01	.1124E+01	.1014E+01	.1[illegible]E+01	.8024E+00	.9794E-01	.3505E+00
43	.1964E+01	.1490E+01	.7979E+00	.1[illegible]E+00	.1442E+01	.1104E+01	.1018E+01	.1[illegible]E+01	.8375E+00	.2991E+00	.3153E+00
44	.1863E+01	.1436E+01	.8644E+00	.1[illegible]E+00	.1377E+01	.1075E+01	.1011E+01	.1[illegible]E+01	.8116E+00	.3527E+00	.2861E+00
45	.1803E+01	.1405E+01	.8145E+00	.1[illegible]E+00	.1334E+01	.1055E+01	.1015E+01	.1[illegible]E+01	.7965E+00	.2184E+00	.2[illegible]E+00
46	.1803E+01	.1405E+01	.8144E+00	.1[illegible]E+00	.1334E+01	.1055E+01	.1015E+01	.1[illegible]E+01	.8146E+00	.1154E+00	.2644E+00

1ST	JACOBIAN	X	Y	DXI/DT	DXI/DX	DXI/DY	DETA/DT	DETA/DX	DETA/DY	EI/EIINF
1	.2582E+01	.1700E+02	.3117E+01	0.	-.2917E+00	-.1[illegible]E+01	0.	-.4184E-02	-.8867E+01	.1529E+01
2	.3544E+01	.1404E+02	.3116E+01	.1149E-05	-.4[illegible]E+00	-.1[illegible]E+01	.8[illegible]E-04	-.4[illegible]E-04	-.8[illegible]E+01	.1526E+01
3	.4490E+01	.1201E+02	.3117E+01	.8[illegible]E-04	-.5[illegible]E+00	-.5[illegible]E+00	.6[illegible]E-03	-.6[illegible]E-01	-.8[illegible]E+01	.1526E+01
4	.6498E+01	.1003E+02	.3149E+01	.5[illegible]E-04	-.8[illegible]E+00	-.7[illegible]E+01	.5[illegible]E-03	-.5[illegible]E-01	-.9[illegible]E+01	.1594E+01
5	.1041E+02	.9053E+01	.3194E+01	.2[illegible]E-04	-.1[illegible]E+01	-.8[illegible]E+01	.1[illegible]E-03	.1[illegible]E+00	-.9[illegible]E+01	.1567E+01
6	.1353E+02	.8219E+01	.3174E+01	.1[illegible]E-04	-.1[illegible]E+01	-.9[illegible]E+01	.9[illegible]E-05	.9[illegible]E+00	-.8[illegible]E+01	.1566E+01
7	.2202E+02	.7750E+01	.3004E+01	.8[illegible]E-05	-.2[illegible]E+01	-.7[illegible]E+01	.5[illegible]E-06	.1[illegible]E+01	-.8[illegible]E+01	.1404E+01
8	.2879E+02	.7461E+01	.2994E+01	.5[illegible]E-05	-.3[illegible]E+01	-.5[illegible]E+00	.2[illegible]E-06	.2[illegible]E+01	-.7418E+01	.1403E+01
9	.3183E+02	.7234E+01	.2977E+01	.4[illegible]E-05	-.4[illegible]E+01	.1[illegible]E+00	.1[illegible]E-06	.3[illegible]E+01	-.6952E+01	.1403E+01
10	.3175E+02	.7036E+01	.2784E+01	.4[illegible]E-05	-.5[illegible]E+01	.1[illegible]E+01	.3[illegible]E-06	.5[illegible]E+01	-.6553E+01	.1401E+01
11	.3088E+02	.6852E+01	.2685E+01	.4[illegible]E-05	-.5[illegible]E+01	.1[illegible]E+01	.7[illegible]E-06	.2[illegible]E+01	-.6131E+01	.1394E+01
12	.3030E+02	.6622E+01	.2606E+01	.5[illegible]E-05	-.6[illegible]E+01	.2[illegible]E+01	.8[illegible]E-06	.2[illegible]E+01	-.5975E+01	.1386E+01
13	.3010E+02	.6424E+01	.2541E+01	.5[illegible]E-05	-.6[illegible]E+01	.4[illegible]E+01	.2[illegible]E-05	.2[illegible]E+01	-.5915E+01	.1377E+01
14	.3026E+02	.6235E+01	.2494E+01	.5[illegible]E-05	-.7[illegible]E+01	.5[illegible]E+01	.2[illegible]E-05	.2[illegible]E+01	-.5836E+01	.1376E+01
15	.2995E+02	.6042E+01	.2481E+01	.5[illegible]E-05	-.6[illegible]E+01	.6[illegible]E+01	.3[illegible]E-05	.1[illegible]E+01	-.5727E+01	.1375E+01
16	.2994E+02	.5858E+01	.2355E+01	.5[illegible]E-05	-.6[illegible]E+01	.7[illegible]E+01	.9[illegible]E-06	.8[illegible]E+00	-.5595E+01	.1374E+01
17	.2834E+02	.5668E+01	.2345E+01	.5[illegible]E-05	-.5[illegible]E+01	.8[illegible]E+01	-.1[illegible]E-05	.1[illegible]E+01	-.5003E+01	.1376E+01
18	.2667E+02	.5496E+01	.2336E+01	.5178E-05	-.5139E+01	.8[illegible]E+01	.1[illegible]E-05	-.3[illegible]E+00	-.4559E+01	.1377E+01
19	.2486E+02	.5328E+01	.2353E+01	.5[illegible]E-05	-.4[illegible]E+01	.8[illegible]E+01	-.1[illegible]E-05	-.7551E+00	-.4041E+01	.1377E+01
20	.2286E+02	.5170E+01	.2391E+01	.5[illegible]E-05	-.3[illegible]E+01	.8[illegible]E+01	-.1[illegible]E-05	-.1107E+01	-.3359E+01	.1375E+01
21	.2134E+02	.5034E+01	.2448E+01	.4[illegible]E-05	-.3[illegible]E+01	.8[illegible]E+01	-.1[illegible]E-05	-.1564E+01	-.2783E+01	.1371E+01
22	.1991E+02	.4904E+01	.2518E+01	.6919E-05	-.3[illegible]E+01	.8[illegible]E+01	-.1[illegible]E-05	-.1[illegible]E+01	-.2[illegible]E+01	.1364E+01
23	.1883E+02	.4808E+01	.2604E+01	.7196E-05	-.2[illegible]E+01	.7[illegible]E+01	-.1[illegible]E-05	-.1[illegible]E+01	-.1[illegible]E+01	.1354E+01
24	.1769E+02	.4718E+01	.2704E+01	.7[illegible]E-05	-.2[illegible]E+01	.7[illegible]E+01	-.1[illegible]E-05	-.1[illegible]E+01	-.1[illegible]E+01	.1343E+01
25	.1659E+02	.4638E+01	.2814E+01	.7[illegible]E-05	-.2[illegible]E+01	.7[illegible]E+01	-.1[illegible]E-05	-.1[illegible]E+01	-.1[illegible]E+01	.1334E+01
26	.1558E+02	.4572E+01	.2934E+01	.6[illegible]E-05	-.1[illegible]E+01	.7[illegible]E+01	-.1[illegible]E-05	-.1[illegible]E+01	-.9[illegible]E+00	.1327E+01
27	.1419E+02	.4520E+01	.3049E+01	.6[illegible]E-05	-.1[illegible]E+01	.7[illegible]E+01	-.1[illegible]E-05	-.1[illegible]E+01	-.6[illegible]E+00	.1325E+01
28	.1317E+02	.4488E+01	.3148E+01	.6[illegible]E-05	-.1[illegible]E+01	.6[illegible]E+01	-.1[illegible]E-05	-.1[illegible]E+01	-.3[illegible]E+01	.1325E+01
29	.1229E+02	.4508E+01	.3396E+01	.6[illegible]E-05	-.7[illegible]E+00	.5[illegible]E+01	-.1[illegible]E-05	-.1[illegible]E+01	.3[illegible]E+00	.1325E+01
30	.1194E+02	.4550E+01	.3499E+01	.8[illegible]E-05	-.2[illegible]E+00	.4[illegible]E+01	-.1[illegible]E-05	-.1[illegible]E+01	.5[illegible]E+00	.1326E+01
31	.1057E+02	.4611E+01	.3665E+01	.1.0[illegible]	.1[illegible]E+00	.3[illegible]E+01	-.1[illegible]E-05	-.1[illegible]E+01	.7[illegible]E+00	.1326E+01
32	.9693E+01	.4700E+01	.3809E+01	.1411E-04	.4[illegible]E+00	.2[illegible]E+01	-.1[illegible]E-05	-.1[illegible]E+01	.9[illegible]E+00	.1325E+01
33	.8805E+01	.4811E+01	.3994E+01	.2014E-04	.1[illegible]E+01	.1[illegible]E+01	-.1[illegible]E-05	-.1[illegible]E+01	.1[illegible]E+01	.1318E+01
34	.7983E+01	.4964E+01	.4119E+01	.2591E-04	.1[illegible]E+01	.9[illegible]E+00	-.1[illegible]E-05	-.1[illegible]E+01	.1[illegible]E+01	.1313E+01
35	.6989E+01	.5145E+01	.4504E+01	.2874E-04	.1[illegible]E+01	.9[illegible]E+00	-.1[illegible]E-05	-.1[illegible]E+01	.1[illegible]E+01	.1315E+01
36	.6141E+01	.5513E+01	.4997E+01	.3419E-04	.2[illegible]E+01	.3[illegible]E+00	-.1[illegible]E-05	-.9[illegible]E+00	.1[illegible]E+01	.1315E+01
37	.5356E+01	.5540E+01	.4603E+01	.4061E-04	.2[illegible]E+01	.-.9[illegible]E+00	-.1[illegible]E-05	-.7[illegible]E+00	.1[illegible]E+01	.1314E+01
38	.4947E+01	.5774E+01	.4775E+01	.4988E-04	.2[illegible]E+01	.2[illegible]E+01	.1[illegible]E-04	-.7[illegible]E+00	.1[illegible]E+01	.1314E+01
39	.3709E+01	.6044E+01	.4976E+01	.5671E-04	.2[illegible]E+01	.1[illegible]E+01	.1[illegible]E-04	-.6[illegible]E+00	.1[illegible]E+01	.1314E+01
40	.3116E+01	.6395E+01	.5147E+01	.6013E-04	.2[illegible]E+01	.1[illegible]E+01	.1[illegible]E-04	-.5[illegible]E+00	.1[illegible]E+01	.1315E+01
41	.2703E+01	.6850E+01	.5195E+01	.5911E-04	.2[illegible]E+01	.8[illegible]E+00	.8[illegible]E-05	-.1[illegible]E+00	.1[illegible]E+01	.1315E+01
42	.2186E+01	.7318E+01	.5286E+01	.5[illegible]E-04	.1[illegible]E+01	.9[illegible]E+00	.9[illegible]E-05	-.1[illegible]E+00	.1[illegible]E+01	.1314E+01
43	.1970E+01	.7899E+01	.5539E+01	.4[illegible]E-04	.1[illegible]E+01	.2[illegible]E+00	.2[illegible]E-04	.1[illegible]E+00	.1[illegible]E+01	.1313E+01
44	.1726E+01	.8529E+01	.5179E+01	.4[illegible]E-04	.1[illegible]E+01	.9[illegible]E-01	.9[illegible]E-05	.1[illegible]E+00	.1[illegible]E+01	.1312E+01
45	.1854E+01	.9027E+01	.5604E+01	.5[illegible]E-04	.1[illegible]E+01	.8[illegible]E-01	.[illegible]E-04	.2[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01
46	.1672E+01	.1004E+02	.5604E+01	0.	.9[illegible]E+00	0.	.[illegible]E-04	-.1[illegible]E+00	.1795E+01	.1[illegible]E+01

SECOND INDEX= 10

1ST	P/PINF	RHO/RHOINF	U/QINF	V/QINF	E/EINF	S/SINF	M	PSTAT	UBAR/AINF	VBAR/AINF	CP
1	.2472E+01	.1878E+01	.8[illegible]E+00	.[illegible]E-01	.1780E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.8[illegible]E+00	.2[illegible]E-01	.4814E+00
2	.2473E+01	.1878E+01	.8[illegible]E+00	.[illegible]E-01	.1780E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.8[illegible]E+00	.2[illegible]E-01	.4815E+00
3	.2519E+01	.1894E+01	.8[illegible]E+00	-.1[illegible]	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.8[illegible]E+00	.9[illegible]E-02	.4950E+00

4	.2595E+01	.1993E+01	.[illegible]	-.[illegible]	.[illegible]	.[illegible]	.[illegible]	.[illegible]	-.797[illegible]	-.[illegible]	.[illegible]
5	.2713E+01	.2001E+01	.[illegible]	.[illegible]	.[illegible]	.[illegible]	.[illegible]	.[illegible]	-.7[illegible]	-.[illegible]	.[illegible]
6	.2870E+01	.2004E+01	.[illegible]	.[illegible]	.[illegible]	.[illegible]	.[illegible]	.[illegible]	-.[illegible]	-.[illegible]	.[illegible]
7	.2920E+01	.2109E+01	.[illegible]	.[illegible]	.[illegible]	.[illegible]	.[illegible]	.[illegible]	-.[illegible]	.[illegible]	.[illegible]
8	.2961E+01	.2129E+01	.[illegible]	.[illegible]	.[illegible]	.[illegible]	.[illegible]	.[illegible]	-.80[illegible]	.[illegible]	.[illegible]
9	.2995E+01	.2135E+01	.[illegible]	.[illegible]	.[illegible]	.[illegible]	.[illegible]	.[illegible]	-.[illegible]	.[illegible]	.[illegible]
10	.2918E+01	.2115E+01	.[illegible]	.[illegible]	.[illegible]	.[illegible]	.[illegible]	.[illegible]	-.[illegible]	.[illegible]	.[illegible]
11	.2878E+01	.2101E+01	.[illegible]	.[illegible]	.[illegible]	.[illegible]	.[illegible]	.[illegible]	-.[illegible]	.[illegible]	.[illegible]
12	.2851E+01	.2098E+01	.[illegible]	.[illegible]	.[illegible]	.[illegible]	.[illegible]	.[illegible]	-.[illegible]	.[illegible]	.[illegible]
13	.2894E+01	.2098E+01	.[illegible]	.[illegible]	.[illegible]	.[illegible]	.[illegible]	.[illegible]	-.[illegible]	.[illegible]	.[illegible]
14	.2861E+01	.2096E+01	.[illegible]	.[illegible]	.[illegible]	.[illegible]	.[illegible]	.[illegible]	-.[illegible]	.[illegible]	.[illegible]
15	.2885E+01	.2103E+01	.[illegible]	.[illegible]	.[illegible]	.[illegible]	.[illegible]	.[illegible]	-.[illegible]	.[illegible]	.[illegible]
16	.2913E+01	.2115E+01	.[illegible]	.[illegible]	.[illegible]	.[illegible]	.[illegible]	.[illegible]	-.[illegible]	.[illegible]	.[illegible]
17	.2928E+01	.2124E+01	.[illegible]	.[illegible]	.[illegible]	.[illegible]	.[illegible]	.[illegible]	-.[illegible]	.[illegible]	.[illegible]
18	.2923E+01	.2120E+01	.[illegible]	.[illegible]	.[illegible]	.[illegible]	.[illegible]	.[illegible]	-.[illegible]	.[illegible]	.[illegible]
19	.2895E+01	.2102E+01	.[illegible]	.[illegible]	.[illegible]	.[illegible]	.[illegible]	.[illegible]	-.[illegible]	.[illegible]	.[illegible]
20	.2867E+01	.2078E+01	.[illegible]	.[illegible]	.[illegible]	.[illegible]	.[illegible]	.[illegible]	-.[illegible]	.[illegible]	.[illegible]
21	.2781E+01	.2045E+01	.[illegible]	.[illegible]	.[illegible]	.[illegible]	.[illegible]	.[illegible]	-.[illegible]	.[illegible]	.[illegible]
22	.2707E+01	.2005E+01	.[illegible]	.[illegible]	.[illegible]	.[illegible]	.[illegible]	.[illegible]	-.[illegible]	.[illegible]	.[illegible]
23	.2644E+01	.1978E+01	.[illegible]	.[illegible]	.[illegible]	.[illegible]	.[illegible]	.[illegible]	-.[illegible]	.[illegible]	.[illegible]
24	.2594E+01	.1910E+01	.[illegible]	.[illegible]	.[illegible]	.[illegible]	.[illegible]	.[illegible]	-.[illegible]	.[illegible]	.[illegible]
25	.2461E+01	.1864E+01	.[illegible]	.[illegible]	.[illegible]	.[illegible]	.[illegible]	.[illegible]	-.[illegible]	.[illegible]	.[illegible]
26	.2378E+01	.1811E+01	.[illegible]	.[illegible]	.[illegible]	.[illegible]	.[illegible]	.[illegible]	-.[illegible]	.[illegible]	.[illegible]
27	.2256E+01	.1760E+01	.[illegible]	.[illegible]	.[illegible]	.[illegible]	.[illegible]	.[illegible]	-.[illegible]	.[illegible]	.[illegible]
28	.2214E+01	.1708E+01	.[illegible]	.[illegible]	.[illegible]	.[illegible]	.[illegible]	.[illegible]	-.[illegible]	.[illegible]	.[illegible]
29	.2134E+01	.1656E+01	.[illegible]	.[illegible]	.[illegible]	.[illegible]	.[illegible]	.[illegible]	-.[illegible]	.[illegible]	.[illegible]
30	.2054E+01	.1594E+01	.[illegible]	.[illegible]	.[illegible]	.[illegible]	.[illegible]	.[illegible]	-.[illegible]	.[illegible]	.[illegible]
31	.1973E+01	.1594E+01	.[illegible]	.[illegible]	.[illegible]	.[illegible]	.[illegible]	.[illegible]	-.[illegible]	.[illegible]	.[illegible]
32	.1874E+01	.1499E+01	.[illegible]	.[illegible]	.[illegible]	.[illegible]	.[illegible]	.[illegible]	-.[illegible]	.[illegible]	.[illegible]
33	.1819E+01	.1498E+01	.[illegible]	.[illegible]	.[illegible]	.[illegible]	.[illegible]	.[illegible]	-.[illegible]	.[illegible]	.[illegible]
34	.1766E+01	.1490E+01	.[illegible]	.[illegible]	.[illegible]	.[illegible]	.[illegible]	.[illegible]	-.[illegible]	.[illegible]	.[illegible]
35	.1724E+01	.1281E+01	.[illegible]	.[illegible]	.[illegible]	.[illegible]	.[illegible]	.[illegible]	-.[illegible]	.[illegible]	.[illegible]
36	.1715E+01	.1370E+01	.[illegible]	.[illegible]	.[illegible]	.[illegible]	.[illegible]	.[illegible]	-.[illegible]	.[illegible]	.[illegible]
37	.1736E+01	.1379E+01	.[illegible]	.[illegible]	.[illegible]	.[illegible]	.[illegible]	.[illegible]	-.[illegible]	.[illegible]	.[illegible]
38	.1779E+01	.1391E+01	.[illegible]	.[illegible]	.[illegible]	.[illegible]	.[illegible]	.[illegible]	-.[illegible]	.[illegible]	.[illegible]
39	.1854E+01	.1410E+01	.[illegible]	.[illegible]	.[illegible]	.[illegible]	.[illegible]	.[illegible]	-.[illegible]	.[illegible]	.[illegible]
40	.1886E+01	.1498E+01	.[illegible]	.[illegible]	.[illegible]	.[illegible]	.[illegible]	.[illegible]	-.[illegible]	.[illegible]	.[illegible]
41	.1915E+01	.1454E+01	.[illegible]	.[illegible]	.[illegible]	.[illegible]	.[illegible]	.[illegible]	-.[illegible]	.[illegible]	.[illegible]
42	.1913E+01	.1454E+01	.[illegible]	.[illegible]	.[illegible]	.[illegible]	.[illegible]	.[illegible]	-.[illegible]	.[illegible]	.[illegible]
43	.1886E+01	.1493E+01	.[illegible]	.[illegible]	.[illegible]	.[illegible]	.[illegible]	.[illegible]	-.[illegible]	.[illegible]	.[illegible]
44	.1849E+01	.1493E+01	.[illegible]	.[illegible]	.[illegible]	.[illegible]	.[illegible]	.[illegible]	-.[illegible]	.[illegible]	.[illegible]
45	.1838E+01	.1490E+01	.[illegible]	.[illegible]	.[illegible]	.[illegible]	.[illegible]	.[illegible]	-.[illegible]	.[illegible]	.[illegible]
46	.1821E+01	.1490E+01	.[illegible]	.[illegible]	.[illegible]	.[illegible]	.[illegible]	.[illegible]	-.[illegible]	.[illegible]	.[illegible]

	JACOBIAN	X	Y	DXI/DT	DXI/DY	DYI/DT	DETA/DT	DETA/DX	DETA/DY	EI/EIN
1	.2153E+01	.1760E+02	.2996E+01	0.	-.[illegible]	-.[illegible]	-.[illegible]	-.[illegible]	-.[illegible]	.[illegible]
2	.3214E+01	.1909E+02	.2999E+01	.1168E-01	-.[illegible]	.[illegible]	.[illegible]	-.[illegible]	-.[illegible]	.[illegible]
3	.4089E+01	.1[illegible]E+02	.2999E+01	.8719E-01	-.[illegible]	.[illegible]	.[illegible]	.[illegible]	-.[illegible]	.[illegible]
4	.5914E+01	.1010E+02	.3[illegible]E+01	.5[illegible]	-.[illegible]	.[illegible]	.[illegible]	-.[illegible]	-.[illegible]	.[illegible]
5	.9576E+01	.9060E+01	.3[illegible]E+01	.[illegible]	.[illegible]	.[illegible]	.[illegible]	.[illegible]	-.[illegible]	.[illegible]
6	.1[illegible]E+02	.8[illegible]E-01	.3[illegible]E+01	.1[illegible]	-.[illegible]	-.[illegible]	.[illegible]	.[illegible]	-.[illegible]	.[illegible]
7	.1935E+02	.7778E+01	.2955E+01	.9[illegible]	-.[illegible]	-.[illegible]	.[illegible]	.[illegible]	-.[illegible]	.[illegible]
8	.2981E+02	.7473E+01	.2847E+01	.6[illegible]	-.[illegible]	-.[illegible]	.[illegible]	.[illegible]	-.[illegible]	.[illegible]
9	.2735E+02	.7215E+01	.2700E+01	.5[illegible]	-.[illegible]	.[illegible]	.[illegible]	.[illegible]	-.[illegible]	.[illegible]
10	.2750E+02	.6935E+01	.2605E+01	.5[illegible]	-.[illegible]	.[illegible]	.[illegible]	.[illegible]	-.[illegible]	.[illegible]
11	.2715E+02	.6754E+01	.2488E+01	.5[illegible]	-.[illegible]	.[illegible]	.[illegible]	.[illegible]	-.[illegible]	.[illegible]
12	.2685E+02	.6458E+01	.2378E+01	.[illegible]	-.[illegible]	.[illegible]	.[illegible]	.[illegible]	-.[illegible]	.[illegible]
13	.2648E+02	.6[illegible]E+01	.2[illegible]E+01	.[illegible]	-.[illegible]	.[illegible]	.[illegible]	.[illegible]	-.[illegible]	.[illegible]
14	.2561E+02	.6[illegible]E+01	.2197E+01	.6[illegible]	-.[illegible]	.[illegible]	.[illegible]	.[illegible]	-.[illegible]	.[illegible]
15	.2410E+02	.5[illegible]E+01	.2197E+01	.6[illegible]	-.[illegible]	.[illegible]	.[illegible]	.[illegible]	-.[illegible]	.[illegible]
..	.2254E+02	.5[illegible]E+01	.2116E+01	.6[illegible]	-.[illegible]	.[illegible]	.[illegible]	.[illegible]	-.[illegible]	.[illegible]
17	.2109E+02	.5317E+01	.2116E+01	.6[illegible]	-.[illegible]	.[illegible]	.[illegible]	.[illegible]	-.[illegible]	.[illegible]
18	.1947E+02	.5119E+01	.2115E+01	.7[illegible]	-.[illegible]	.[illegible]	.[illegible]	.[illegible]	-.[illegible]	.[illegible]
19	.1788E+02	.4919E+01	.2114E+01	.[illegible]	-.[illegible]	.[illegible]	.[illegible]	.[illegible]	-.[illegible]	.[illegible]
20	.1675E+02	.4734E+01	.2[illegible]E+01	.[illegible]	-.[illegible]	.[illegible]	.[illegible]	.[illegible]	-.[illegible]	.[illegible]
21	.1570E+02	.4586E+01	.2[illegible]E+01	.[illegible]	-.[illegible]	.[illegible]	.[illegible]	.[illegible]	-.[illegible]	.[illegible]
22	.1496E+02	.4493E+01	.2[illegible]E+01	.1[illegible]	-.[illegible]	.[illegible]	.[illegible]	.[illegible]	-.[illegible]	.[illegible]

23	.1352E+02	.4323E+01	.2927E+01	.1044E-04	-.3034E+01	.6988E+01	.1[illegible]E-05	-.1299E+01	-.1468E+01	.1342E+01
24	.1274E+02	.4218E+01	.2537E+01	.1123E-04	-.2787E+01	.6[illegible]E+01	.1[illegible]E-05	-.1[illegible]E+01	-.1282E+01	.1334E+01
25	.1194E+02	.4123E+01	.2183E+01	.1191E-04	-.2726E+01	.6[illegible]E+01	.1[illegible]E-05	-.1[illegible]E+01	-.1085E+01	.1322E+01
26	.1110E+02	.4037E+01	.1[illegible]E+01	.1[illegible]E-04	-.[illegible]E+01	.6[illegible]E+01	.[illegible]E-06	-.1[illegible]E+01	-.[illegible]E+00	.1315E+01
27	.1023E+02	.3965E+01	.1[illegible]E+01	.1[illegible]E-04	-.[illegible]E+01	.6[illegible]E+01	.[illegible]E-06	-.1[illegible]E+01	-.[illegible]E+00	.1305E+01
28	.9427E+01	.3905E+01	.1[illegible]E+01	.1[illegible]E-04	-.[illegible]E+01	.5[illegible]E+01	.1[illegible]E-05	-.1[illegible]E+01	-.2786E+00	.1294E+01
29	.8763E+01	.3[illegible]E+01	.1[illegible]E+01	.1[illegible]E-04	-.[illegible]E+01	.5[illegible]E+01	.1[illegible]E-05	-.1[illegible]E+01	.[illegible]E-01	.1[illegible]E+01
30	.8088E+01	.3[illegible]E+01	.1[illegible]E+01	.1[illegible]E-04	-.1[illegible]E+01	.5[illegible]E+01	.[illegible]E-06	-.1[illegible]E+01	.[illegible]E+00	.1[illegible]E+01
31	.7376E+01	.3[illegible]E+01	.1[illegible]E+01	.1[illegible]E-04	-.1[illegible]E+01	.[illegible]E+01	.1[illegible]E-05	-.1[illegible]E+01	.[illegible]E+00	.1[illegible]E+01
32	.6669E+01	.3[illegible]E+01	.1[illegible]E+01	.1[illegible]E-04	-.[illegible]E+01	.[illegible]E+01	.1[illegible]E-05	-.1[illegible]E+01	.[illegible]E+00	.1[illegible]E+01
33	.5987E+01	.4115E+01	.9[illegible]E+01	.[illegible]E-04	-.[illegible]E+01	.[illegible]E+01	.1[illegible]E-05	-.1[illegible]E+01	.6[illegible]E+00	.1[illegible]E+01
34	.5312E+01	.4254E+01	.8[illegible]E+01	.2[illegible]E-04	-.[illegible]E+01	.[illegible]E+01	.[illegible]E-05	-.1[illegible]E+01	.8191E+00	.1[illegible]E+01
35	.4578E+01	.4421E+01	.7[illegible]E+01	.2[illegible]E-04	.[illegible]E+00	.[illegible]E+01	.[illegible]E-05	-.1[illegible]E+01	.[illegible]E+00	.1[illegible]E+01
36	.3995E+01	.4588E+01	.7[illegible]E+01	.3[illegible]E-04	.[illegible]E+00	.[illegible]E+01	.1[illegible]E-04	-.1[illegible]E+01	.[illegible]E+00	.1[illegible]E+01
37	.3423E+01	.4885E+01	.6[illegible]E+01	.[illegible]E-04	.[illegible]E+00	.[illegible]E+01	.1[illegible]E-04	-.[illegible]E+00	.9113E+00	.1[illegible]E+01
38	.2853E+01	.5117E+01	.5[illegible]E+01	.5[illegible]E-04	.1[illegible]E+01	.[illegible]E+01	.[illegible]E-04	-.[illegible]E+00	.[illegible]E+00	.1[illegible]E+01
39	.2313E+01	.5386E+01	.5[illegible]E+01	.[illegible]E-04	.1[illegible]E+01	.[illegible]E+01	.[illegible]E-04	-.[illegible]E+00	.7815E+00	.1[illegible]E+01
40	.2023E+01	.5781E+01	.5[illegible]E+01	.8[illegible]E-04	.1[illegible]E+01	.1[illegible]E+01	.5[illegible]E-04	-.9117E+00	.9[illegible]E+00	.1[illegible]E+01
41	.1736E+01	.6337E+01	.4[illegible]E+01	.[illegible]E-04	.1[illegible]E+01	.1[illegible]E+01	.[illegible]E-04	-.[illegible]E+00	.1[illegible]E+01	.1[illegible]E+01
42	.1431E+01	.6955E+01	.4[illegible]E+01	.[illegible]E-04	.1[illegible]E+01	.[illegible]E+01	.[illegible]E-05	-.1[illegible]E+00	.9[illegible]E+00	.1[illegible]E+01
43	.1316E+01	.7[illegible]E+01	.4[illegible]E+01	.6[illegible]E-04	.1[illegible]E+01	.[illegible]E+01	.[illegible]E-04	.1[illegible]E+00	.1[illegible]E+01	.1[illegible]E+01
44	.1208E+01	.8555E+01	.3[illegible]E+01	.[illegible]E-04	.1[illegible]E+01	.1[illegible]E+01	.6[illegible]E-04	.3[illegible]E+00	.1[illegible]E+01	.1[illegible]E+01
45	.1145E+01	.9999E+01	.3[illegible]E+01	.3[illegible]E-04	.1[illegible]E+01	.2[illegible]E+01	.7[illegible]E-04	.2[illegible]E+00	.1[illegible]E+01	.1[illegible]E+01
46	.1141E+01	.1042E+02	.3657E+01	0.	.9964E+00	.9[illegible]E-15	0.	-.1[illegible]E+00	.1[illegible]E+01	.1[illegible]E+01

SECOND INDEX= 11

IST	P/P1NF	RHO/R1NF	U/U1NF	V/U1NF	E/E1/T1NF	S/S1N	MT/MT1NF	MACH	UBAR/G1NF	VBAR/G1NF	CP
1	.2457E+01	.1873E+01	.8114E+00	-.2278E-01	.1784E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.8114E+00	.2264E-01	.4764E+00
2	.2456E+01	.1872E+01	.8115E+00	-.2277E-01	.1784E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.8113E+00	.2278E-01	.4767E+00
3	.2491E+01	.1888E+01	.8073E+00	-.1974E-01	.1801E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.8091E+00	.9056E-02	.4877E+00
4	.2560E+01	.1924E+01	.8035E+00	-.7554E-02	.1834E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.8054E+00	-.7254E-02	.5100E+00
5	.2654E+01	.1969E+01	.7995E+00	.1525E-01	.1874E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.7991E+00	.4853E-02	.5395E+00
6	.2737E+01	.2014E+01	.7957E+00	.4753E-01	.1911E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.7949E+00	.1696E-01	.5663E+00
7	.2790E+01	.2049E+01	.7931E+00	.8004E-01	.1938E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.7917E+00	.3227E-01	.5881E+00
8	.2819E+01	.2068E+01	.7919E+00	.1260E+00	.1949E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.8571E+00	.2149E+00	.5965E+00
9	.2800E+01	.2060E+01	.7951E+00	.1636E+00	.1943E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.9[illegible]E+00	.2045E+00	.5907E+00
10	.2781E+01	.2053E+01	.7979E+00	.1969E+00	.1921E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.9564E+00	.2967E+00	.5825E+00
11	.2770E+01	.2049E+01	.7985E+00	.2[illegible]E+00	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.9391E+00	.1655E+00	.5780E+00
12	.2789E+01	.2065E+01	.7936E+00	.2915E+00	.1939E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.8506E+00	.8271E-01	.5878E+00
13	.2821E+01	.2076E+01	.7934E+00	.2528E+00	.1955E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.7096E+00	-.7156E-01	.5955E+00
14	.2869E+01	.2100E+01	.7903E+00	.2561E+00	.1980E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.5250E+00	-.2603E+00	.6117E+00
15	.2911E+01	.2121E+01	.7881E+00	.2599E+00	.2001E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.3910E+00	-.3599E+00	.6254E+00
16	.2937E+01	.2131E+01	.7825E+00	.2496E+00	.2014E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.3056E+00	-.4737E+00	.6335E+00
17	.2956E+01	.2127E+01	.7820E+00	.2424E+00	.2019E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.2600E+00	-.5226E+00	.6394E+00
18	.2893E+01	.2107E+01	.7920E+00	.2355E+00	.1993E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.2559E+00	-.5315E+00	.6210E+00
19	.2853E+01	.2077E+01	.7975E+00	.2258E+00	.1957E+01	.1[illegible]E+01	.9977E+00	.1[illegible]E+01	-.2564E+00	-.5530E+00	.6005E+00
20	.2751E+01	.2027E+01	.8029E+00	.2155E+00	.1881E+01	.1[illegible]E+01	.9951E+00	.1[illegible]E+01	-.2487E+00	-.5541E+00	.5727E+00
21	.2654E+01	.1977E+01	.8076E+00	.2059E+00	.1824E+01	.1[illegible]E+01	.9894E+00	.1[illegible]E+01	-.2414E+00	-.5[illegible]E+00	.5411E+00
22	.2559E+01	.1929E+01	.8119E+00	.1979E+00	.1770E+01	.1[illegible]E+01	.9861E+00	.1[illegible]E+01	-.2357E+00	-.6[illegible]E+00	.5092E+00
23	.2456E+01	.1865E+01	.8154E+00	.1854E+00	.1722E+01	.1[illegible]E+01	.9854E+00	.1[illegible]E+01	-.2[illegible]E+00	-.6[illegible]E+00	.4761E+00
24	.2362E+01	.1813E+01	.8184E+00	.1790E+00	.1671E+01	.1[illegible]E+01	.9[illegible]E+00	.1[illegible]E+01	-.2488E+00	-.6[illegible]E+00	.4459E+00
25	.2271E+01	.1758E+01	.8209E+00	.1694E+00	.1631E+01	.1[illegible]E+01	.9[illegible]E+00	.1[illegible]E+01	-.2[illegible]E+00	-.6[illegible]E+00	.4[illegible]E+00
26	.2181E+01	.1707E+01	.8230E+00	.1591E+00	.1587E+01	.1[illegible]E+01	.9[illegible]E+00	.1[illegible]E+01	-.2[illegible]E+00	-.6[illegible]E+00	.3[illegible]E+00
27	.2087E+01	.1649E+01	.8248E+00	.1482E+00	.1550E+01	.1[illegible]E+01	.9[illegible]E+00	.1[illegible]E+01	-.2[illegible]E+00	-.7[illegible]E+00	.3[illegible]E+00
28	.1989E+01	.1594E+01	.7991E+00	.1398E+00	.1466E+01	.1[illegible]E+01	.9[illegible]E+00	.1[illegible]E+01	-.3[illegible]E+00	-.8[illegible]E+00	.3[illegible]E+00
29	.1884E+01	.1532E+01	.8126E+00	.1315E+00	.1[illegible]E+01	.1[illegible]E+01	.9[illegible]E+00	.1[illegible]E+01	-.3[illegible]E+00	-.9[illegible]E+00	.2[illegible]E+00
30	.1778E+01	.1[illegible]E+01	.8[illegible]E+00	.9918E-01	.1[illegible]E+01	.1[illegible]E+01	.9[illegible]E+00	.1[illegible]E+01	-.3[illegible]E+00	-.9[illegible]E+00	.2[illegible]E+00
31	.1675E+01	.1580E+01	.8[illegible]E+00	.8[illegible]E-01	.1[illegible]E+01	.1[illegible]E+01	.9[illegible]E+00	.1[illegible]E+01	-.4[illegible]E+00	-.9[illegible]E+00	.2[illegible]E+00
32	.1581E+01	.1[illegible]E+01	.8[illegible]E+00	.6[illegible]E-01	.1[illegible]E+01	.1[illegible]E+01	.9[illegible]E+00	.1[illegible]E+01	-.4[illegible]E+00	-.1[illegible]E+01	.1[illegible]E+00
33	.1504E+01	.1[illegible]E+01	.8[illegible]E+00	.5[illegible]E-01	.1[illegible]E+01	.1[illegible]E+01	.9[illegible]E+00	.1[illegible]E+01	-.4[illegible]E+00	-.1[illegible]E+01	.1[illegible]E+00
34	.1441E+01	.1[illegible]E+01	.8[illegible]E+00	.3[illegible]E-01	.1[illegible]E+01	.1[illegible]E+01	.9[illegible]E+00	.1[illegible]E+01	-.5[illegible]E+00	-.1[illegible]E+01	.1[illegible]E+00
35	.1403E+01	.1[illegible]E+01	.8[illegible]E+00	.2[illegible]E-01	.1[illegible]E+01	.1[illegible]E+01	.9[illegible]E+00	.1[illegible]E+01	-.5[illegible]E+00	-.1[illegible]E+01	.1[illegible]E+00
36	.1384E+01	.1[illegible]E+01	.8[illegible]E+00	.2[illegible]E-01	.1[illegible]E+01	.1[illegible]E+01	.9[illegible]E+00	.1[illegible]E+01	-.[illegible]E+00	-.9[illegible]E+00	.1[illegible]E+00
37	.1407E+01	.1[illegible]E+01	.8[illegible]E+00	.2[illegible]E-01	.1[illegible]E+01	.1[illegible]E+01	.[illegible]E+00	.1[illegible]E+01	-.5[illegible]E+00	-.8[illegible]E+00	.1[illegible]E+00
38	.1415E+01	.1[illegible]E+01	.8[illegible]E+00	.[illegible]E-01	.1[illegible]E+01	.1[illegible]E+01	.[illegible]E+00	.1[illegible]E+01	.[illegible]E+00	-.8[illegible]E+00	.1[illegible]E+00
39	.1536E+01	.1[illegible]E+01	.8[illegible]E+00	.[illegible]E-01	.1[illegible]E+01	.1[illegible]E+01	.[illegible]E+00	.1[illegible]E+01	.2[illegible]E+00	-.7[illegible]E+00	.1[illegible]E+00
40	.1579E+01	.1[illegible]E+01	.8[illegible]E+00	.[illegible]E-01	.1[illegible]E+01	.1[illegible]E+01	.[illegible]E+00	.1[illegible]E+01	.[illegible]E+00	-.9[illegible]E+00	.1[illegible]E+00

41	.1675E+01	.1335E+01	.8151E+00	.1252E+00	.1253E+01	.1117E+01	.9866E+00	.1539E+01	.6326E+00	-.2962E+00	.2207E+00
42	.1734E+01	.1364E+01	.8134E+00	.1500E+00	.1299E+01	.1[illegible]E+01	.9[illegible]E+00	.1579E+01	.7452E+00	-.1488E+00	.2401E+00
43	.1771E+01	.1381E+01	.8152E+00	.1695E+00	.1350E+01	.11[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1022E+01	.3403E+00	.2523E+00
44	.1786E+01	.1388E+01	.8181E+00	.1794E+00	.1382E+01	.11[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1085E+01	.5966E+00	.2571E+00
45	.1788E+01	.1389E+01	.8[illegible]E+00	.1874E+00	.1396E+01	.11[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.8[illegible]E+00	.2579E+00
46	.1788E+01	.1389E+01	.8[illegible]E+00	.1894E+00	.1396E+01	.11[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.8[illegible]E+00	.2577E+00

1ST	JACOBIAN	X	Y	DX1/DT	DY1/DX	[illegible]	DY1/DT	DY1/DX	DY1/DX	DY1/DX
1	.2241E+01	.1700E+00	.2864E+01 0.		-.[illegible]			-.8[illegible]05	-.[illegible]+01	.1317E+01
2	.3048E+01	.1498E+00	.2864E+01	.1111E 04	-.[illegible]	-.3[illegible]	.7[illegible]04	-.11[illegible]	-.3[illegible]+01	.1315E+01
3	.3887E+01	.1301E+00	.2864E+01	.8511E 04	-.[illegible]	-.1[illegible]	.5[illegible]04	-.9[illegible]03	-.2[illegible]+01	.1314E+01
4	.5636E+01	.1011E+00	.2[illegible]E+01	.5[illegible] 04	-.[illegible]	-.1[illegible]	.2[illegible]04	-.1[illegible]+00	-.8[illegible]+01	.1313E+01
5	.9184E+01	.9084E+01	.2[illegible]E+01	.2[illegible]04	-.[illegible]	-.[illegible]	.1[illegible]04	.2[illegible]+00	-.8[illegible]+01	.1312E+01
6	.1164E+02	.8[illegible]+01	.2[illegible]+01	.1[illegible]04	.1[illegible]+01	.8[illegible]+01	.8[illegible]05	.6[illegible]+00	-.7[illegible]+01	.1312E+01
7	.1814E+02	.7[illegible]+01	.2[illegible]+01	.1[illegible]04	-.[illegible]+01	-.[illegible]+01	.4[illegible]05	.1[illegible]+01	-.7[illegible]+01	.1312E+01
8	.2297E+02	.7[illegible]+01	.2[illegible]+01	.8574E 05	-.[illegible]+01	.[illegible]+01	.5[illegible]05	.5[illegible]+01	-.7[illegible]+01	.1312E+01
9	.2549E+02	.7177E+01	.2558E+01	.4594E 05	-.6[illegible]+01	.1[illegible]+01	.5[illegible]05	.5[illegible]+01	-.7[illegible]+01	.1312E+01
10	.2606E+02	.6895E+01	.2491E+01	.4379E 05	-.4[illegible]+01	.2[illegible]+01	.5[illegible]05	.5[illegible]+01	-.7[illegible]+01	.1312E+01
11	.2627E+02	.6603E+01	.2[illegible]E+01	.4334E 05	-.5[illegible]+01	.3[illegible]+01	.5[illegible]05	.3[illegible]+01	-.7[illegible]+01	.1313E+01
12	.2605E+02	.6412E+01	.2153E+01	.4334E 05	-.5[illegible]+01	.5[illegible]+01	.5[illegible]05	.2[illegible]+01	-.7[illegible]+01	.1313E+01
13	.2497E+02	.6[illegible]+01	.2057E+01	.4417E 05	-.5[illegible]+01	.6[illegible]+01	.2[illegible]05	.2[illegible]+01	-.7[illegible]+01	.1313E+01
14	.2315E+02	.5696E+01	.1974E+01	.4654E 05	-.5[illegible]+01	.7[illegible]+01	.1[illegible]05	.1[illegible]+01	-.6[illegible]+01	.1314E+01
15	.2107E+02	.5413E+01	.1925E+01	.4[illegible]E 05	-.4[illegible]+01	.7[illegible]+01	.6[illegible]04	.7[illegible]+00	-.5[illegible]+01	.1315E+01
16	.1910E+02	.5134E+01	.1878E+01	.3[illegible]E 05	-.4[illegible]+01	.7[illegible]+01	.1[illegible]04	.[illegible]+00	-.4[illegible]+01	.1316E+01
17	.1765E+02	.4884E+01	.1878E+01	.2[illegible]E 05	.[illegible]+01	.7[illegible]+01	.9[illegible]04	.1[illegible]+00	-.4[illegible]+01	.1317E+01
18	.1678E+02	.4664E+01	.1908E+01	.2[illegible]E 05	.5[illegible]+01	.7[illegible]+01	.9[illegible]04	.[illegible]+00	-.3[illegible]+01	.1318E+01
19	.1488E+02	.4499E+01	.1923E+01	.5[illegible]E 05	-.5[illegible]+01	.7[illegible]+01	.1[illegible]04	-.3[illegible]+00	-.3[illegible]+01	.1320E+01
20	.1364E+02	.4234E+01	.1959E+01	.1[illegible]E 04	-.5[illegible]+01	.6[illegible]+01	.3[illegible]04	-.5[illegible]+00	-.2[illegible]+01	.1321E+01
21	.1285E+02	.4063E+01	.2003E+01	.1[illegible]E 04	-.5[illegible]+01	.6[illegible]+01	.9[illegible]04	-.7[illegible]+00	-.2[illegible]+01	.1322E+01
22	.1205E+02	.3900E+01	.2068E+01	.1[illegible]E 04	-.5[illegible]+01	.6[illegible]+01	.1[illegible]05	-.8[illegible]+00	-.1[illegible]+01	.1323E+01
23	.1154E+02	.3776E+01	.2157E+01	.1[illegible]E 04	-.5[illegible]+01	.6[illegible]+01	.1[illegible]05	-.1[illegible]+01	-.1[illegible]+01	.1324E+01
24	.1090E+02	.3659E+01	.2[illegible]E+01	.1[illegible]E 04	-.5[illegible]+01	.6[illegible]+01	.2[illegible]05	-.1[illegible]+01	-.1[illegible]+01	.1325E+01
25	.1033E+02	.3547E+01	.2294E+01	.1[illegible]E 04	-.5[illegible]+01	.5[illegible]+01	.2[illegible]05	-.1[illegible]+01	-.1[illegible]+01	.1329E+01
26	.9694E+01	.3443E+01	.2455E+01	.1[illegible]E 04	-.5[illegible]+01	.5[illegible]+01	.5[illegible]05	-.1[illegible]+01	-.9[illegible]+00	.1327E+01
27	.9001E+01	.3344E+01	.2[illegible]E+01	.1[illegible]E 04	-.5[illegible]+01	.5[illegible]+01	.3[illegible]05	-.1[illegible]+01	-.8[illegible]+00	.1326E+01
28	.8274E+01	.3259E+01	.2719E+01	.1[illegible]E 04	-.4[illegible]+01	.5[illegible]+01	.4[illegible]05	-.1[illegible]+01	-.7[illegible]+00	.1325E+01
29	.7688E+01	.3234E+01	.2[illegible]E+01	.1[illegible]E 04	-.3[illegible]+01	.4[illegible]+01	.5[illegible]05	-.1[illegible]+01	-.6[illegible]+00	.1323E+01
30	.7059E+01	.3[illegible]E+01	.3[illegible]E+01	.1[illegible]E 04	-.[illegible]+01	.4[illegible]+01	.6[illegible]05	-.1[illegible]+01	-.[illegible] 01	.1322E+01
31	.6381E+01	.3[illegible]E+01	.3[illegible]E+01	.1[illegible]E 04	-.[illegible]+01	.4[illegible]+01	.7[illegible]05	-.1[illegible]+01	.[illegible] 01	.1320E+01
32	.5691E+01	.3256E+01	.3[illegible]E+01	.1[illegible]E 04	-.[illegible]+01	.4[illegible]+01	.8[illegible]05	-.1[illegible]+01	.1[illegible]+00	.1319E+01
33	.5035E+01	.3[illegible]E+01	.3[illegible]E+01	.1[illegible]E 04	-.[illegible]+01	.3[illegible]+01	.9[illegible]05	-.1[illegible]+01	.3[illegible]+00	.1317E+01
34	.4389E+01	.3387E+01	.4[illegible]E+01	.1[illegible]E 04	-.1[illegible]+01	.3[illegible]+01	.1[illegible]04	-.1[illegible]+01	.4[illegible]+00	.1316E+01
35	.3720E+01	.3508E+01	.4[illegible]E+01	.2[illegible]E 04	-.[illegible]+01	.3[illegible]+01	.1[illegible]04	-.1[illegible]+01	.4[illegible]+00	.1315E+01
36	.3179E+01	.3614E+01	.4[illegible]E+01	.2[illegible]E 04	-.[illegible]+01	.3[illegible]+01	.1[illegible]04	-.1[illegible]+01	.5[illegible]+00	.1315E+01
37	.2699E+01	.3[illegible]E+01	.5[illegible]E+01	.3[illegible]E 04	-.[illegible]+01	.2[illegible]+01	.1[illegible]04	-.1[illegible]+01	.6[illegible]+00	.1316E+01
38	.2150E+01	.4097E+01	.5[illegible]E+01	.5[illegible]E 04	.1[illegible]+01	.1[illegible]+01	.5[illegible]04	-.5[illegible]+00	.5[illegible]+00	.1318E+01
39	.1761E+01	.4335E+01	.6[illegible]E+01	.7[illegible]E 04	.5[illegible]+01	.1[illegible]+01	.5[illegible]04	.[illegible]+00	.5[illegible]+00	.1.[illegible]+01
40	.1499E+01	.4[illegible]E+01	.6[illegible]E+01	.8[illegible]E 04	.5[illegible]+01	.1[illegible]+01	.5[illegible]04	.5[illegible]+00	.8[illegible]+00	.1325E+01
41	.1299E+01	.5511E+01	.6[illegible]E+01	.9[illegible]E 04	.7[illegible]+01	.1[illegible]+01	.5[illegible]04	.9[illegible]+00	.8[illegible]+00	.1329E+01
42	.1061E+01	.6163E+01	.7[illegible]E+01	.9[illegible]E 04	.9[illegible]+01	.1[illegible]+01	.1[illegible]05	-.2[illegible]+00	.8[illegible]+00	.1327E+01
43	.1005E+01	.7091E-01	.7[illegible]E+01	.7[illegible]E 04	.1[illegible]+01	.1[illegible]+01	.5[illegible]04	.1[illegible]+00	.1[illegible]+01	.1328E+01
44	.9978E+00	.8507E+01	.6[illegible]E+01	.5[illegible]E 04	.1[illegible]+01	.1[illegible]+01	.9[illegible]04	.9[illegible]+00	.1[illegible]+01	.1328E+01
45	.1158E+01	.9591E+01	.4[illegible]E+01	.3[illegible]E 04	.9[illegible]+01	.1[illegible]+01	.1[illegible]03	.5[illegible]+00	.1[illegible]+01	.1328E+01
46	.1268E+01	.1016E+02	.4[illegible]E+01 0.		.9[illegible]+00	.1[illegible]+01 0.		-.1[illegible]+00	.1[illegible]+01	.1328E+01

SECOND IMAX = 12

1ST	P/P1N	RHO/RHO1N	U/Q1N	V/Q1N	E1/E111N	S/S1N	HT/HT1N	MACH	UBAR/Q1N	VBAR/Q1N	CP
1	.2941E+01	.1864E+01	.8177E+00	-.2941E 01	.1781E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.8177E+00	.2[illegible]E 01	.4713E+00
2	.2943E+01	.1864E+01	.8176E+00	-.2941E 01	.1780E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.8177E+00	.2941E 01	.4715E+00
3	.2947E+01	.1878E+01	.8155E+00	-.2[illegible]E 01	.1798E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.8155E+00	.8[illegible]E-02	.4797E+00
4	.2951E+01	.1903E+01	.8[illegible]E+00	-.8[illegible]E 02	.1818E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.8[illegible]E+00	-.1[illegible]E 01	.4963E+00
5	.2956E+01	.1935E+01	.8016E+00	.1[illegible]E 01	.1864E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.8[illegible]E+00	.1[illegible]E 01	.5173E+00
6	.2963E+01	.1963E+01	.7[illegible]E+00	.[illegible]E 01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.7[illegible]E+00	.2[illegible]E-01	.5370E+00
7	.2680E+01	.1988E+01	.7[illegible]E+00	.8[illegible]E 01	.1988E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.8[illegible]E+00	.8[illegible]E-01	.5497E+00
8	.2690E+01	.1997E+01	.7710E+00	.1[illegible]E+00	.1988E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.9[illegible]E+00	.2[illegible]E+00	.5578E+00
9	.2684E+01	.1994E+01	.7[illegible]E+00	.1[illegible]E+00	.1988E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.9[illegible]E+00	.2735E+00	.5509E+00
10	.2686E+01	.2002E+01	.7[illegible]E+00	.1[illegible]E+00	.1988E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.9[illegible]E+00	.2875E+00	.5513E+00

11	.2713E+01	.2022E+01	.7495E+00	.2379E+00	.1804E+01	.1012E+01	.1063E+01	.1414E+01	-.9180E+00	.1962E+00	.5602E+00
12	.2769E+01	.2052E+01	.7430E+00	.2488E+00	.1975E+01	[illegible]	[illegible]	.1410E+01	-.7735E+00	-.1065E 01	.5785E+00
13	.2840E+01	.2088E+01	.7350E+00	.2547E+00	.1971E+01	[illegible]	[illegible]	[illegible]	-.6188E+00	-.1665E+00	.6018E+00
14	.2905E+01	.2120E+01	.7287E+00	.2571E+00	[illegible]	[illegible]	[illegible]	[illegible]	-.4749E+00	-.3085E+00	.6253E+00
15	.2946E+01	.2139E+01	[illegible]	.2531E+00	[illegible]	[illegible]	[illegible]	[illegible]	-.3944E+00	-.3948E+00	.6535E+00
16	.2950E+01	.2138E+01	.7185E+00	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	-.3534E+00	-.4256E+00	.6379E+00
17	.2914E+01	.2117E+01	.7174E+00	.2394E+00	.1934E+01	[illegible]	[illegible]	[illegible]	-.3284E+00	[illegible]	.6254E+00
18	.2859E+01	.2074E+01	.7214E+00	.2254E+00	.1918E+01	[illegible]	[illegible]	.1544E+01	-.3473E+00	[illegible]	.6015E+00
19	.2754E+01	.2028E+01	.7254E+00	.2154E+00	.1871E+01	[illegible]	[illegible]	.1584E+01	-.3717E+00	-.4145E+00	.5679E+00
20	.2616E+01	.1955E+01	.7394E+00	.2054E+00	.1854E+01	[illegible]	.9885E+00	.1584E+01	-.3604E+00	-.4544E+00	.5254E+00
21	.2493E+01	.1888E+01	.7548E+00	.1954E+00	.1794E+01	[illegible]	.9874E+00	.1518E+01	-.3515E+00	-.4987E+00	.4874E+00
22	.2373E+01	.1825E+01	.7654E+00	.1821E+00	.1684E+01	.1028E+01	.9857E+00	.1494E+01	-.3421E+00	-.5568E+00	.4455E+00
23	.2266E+01	.1763E+01	.7787E+00	.1724E+00	.1674E+01	.1028E+01	.9828E+00	.1473E+01	-.3369E+00	-.5954E+00	.4139E+00
24	.2171E+01	.1703E+01	.7904E+00	.1651E+00	.1588E+01	.1027E+01	.9815E+00	.1444E+01	-.3604E+00	-.6014E+00	.3679E+00
25	.2097E+01	.1648E+01	.8054E+00	.1554E+00	.1594E+01	[illegible]	.9804E+00	.1528E+01	-.3854E+00	-.6134E+00	.3549E+00
26	.1994E+01	.1607E+01	.8116E+00	.1494E+00	.1497E+01	.1049E+01	.9744E+00	.1599E+01	-.4078E+00	-.6339E+00	.3254E+00
27	.1898E+01	.1595E+01	.8277E+00	.1508E+00	.1494E+01	.1049E+01	.9778E+00	.1574E+01	-.4561E+00	-.6518E+00	.2958E+00
28	.1786E+01	.1481E+01	.8574E+00	.1159E+00	.1384E+01	.1056E+01	.9767E+00	.1608E+01	-.4854E+00	-.8186E+00	.2576E+00
29	.1666E+01	.1405E+01	.8594E+00	.9344E-01	.1317E+01	.1033E+01	.9748E+00	.1657E+01	-.5624E+00	-.1006E+01	.2157E+00
30	.1529E+01	.1325E+01	.8758E+00	.3074E-01	.1248E+01	.1051E+01	.9741E+00	.1706E+01	-.6516E+00	-.1066E+01	.1734E+00
31	.1405E+01	.1249E+01	.8945E+00	.9814E-01	.1285E+01	.1036E+01	.9708E+00	.1765E+01	-.7195E+00	-.1115E+01	.1325E+00
32	.1301E+01	.1185E+01	.9134E+00	[illegible]	.1174E+01	.1028E+01	.9718E+00	.1051E+01	-.7736E+00	-.1159E+01	.9894E-01
33	.1222E+01	.1134E+01	.9254E+00	.1264E-01	.1084E+01	.1027E+01	.9786E+00	.1076E+01	-.8584E+00	-.1249E+01	.7271E-01
34	.1171E+01	.1098E+01	.9364E+00	.1439E-02	.1044E+01	.1027E+01	.9809E+00	.1981E+01	-.8511E+00	-.1541E+01	.5505E-01
35	.1144E+01	.1079E+01	.9421E+00	-.1617E-02	.1094E+01	.1049E+01	.9764E+00	.1417E+01	-.7691E+00	-.1275E+01	.4715E-01
36	.1141E+01	.1075E+01	.9301E+00	-.7784E-02	.1054E+01	.1031E+01	.9786E+00	.1758E+01	-.7625E+00	-.1321E+01	.4615E-01
37	.1162E+01	.1086E+01	.9274E+00	-.3676E-02	.1037E+01	.1036E+01	.9798E+00	.1874E+01	-.6316E+00	-.1264E+01	.5505E-01
38	.1204E+01	.1110E+01	.9129E+00	.8519E-02	.1055E+01	.1044E+01	.9698E+00	.1875E+01	-.4201E+00	-.1105E+01	.6804E-01
39	.1278E+01	.1147E+01	.8954E+00	.2949E-01	.1084E+01	.1054E+01	.9688E+00	.1774E+01	-.2748E+00	-.1098E+01	.9097E-01
40	.1368E+01	.1195E+01	.8774E+00	.5794E-01	.1123E+01	.1048E+01	.9725E+00	.1717E+01	.9559E-02	-.8764E+00	.1201E+00
41	.1464E+01	.1241E+01	.8615E+00	.9055E-01	.1174E+01	.1089E+01	.9810E+00	.1644E+01	.3807E+00	-.5078E+00	.1529E+00
42	.1561E+01	.1284E+01	.8494E+00	.1250E+00	.1225E+01	.1104E+01	.9979E+00	.1629E+01	.5898E+00	-.3701E+00	.1835E+00
43	.1640E+01	.1319E+01	.8424E+00	.1508E+00	.1278E+01	.1119E+01	.1007E+01	.1604E+01	.1006E+01	.2096E+00	.2094E+00
44	.1692E+01	.1342E+01	.8356E+00	.1659E+00	.1301E+01	.1124E+01	.1015E+01	.1595E+01	.1203E+01	.6049E+00	.2265E+00
45	.1714E+01	.1356E+01	.8304E+00	.1705E+00	.1318E+01	.1134E+01	.1014E+01	.1560E+01	.9697E+00	.9560E+00	.2334E+00
46	.1714E+01	.1356E+01	.8305E+00	.1705E+00	.1317E+01	.1136E+01	.1026E+01	.1596E+01	.8460E+00	.1157E+00	.2334E+00

1ST	JACOBIAN	X	Y	DXI/DT	DXI/DX	DXI/DY	DETA/DT	DETA/DX	DETA/DY	[illegible]
1	.2241E+01	.1700E+02	.2736E+01	0.	-.2929E+00	.1274E-12	0.	.8895E-03	-.7654E+01	.1570E+01
2	.3066E+01	.1909E+02	.2736E+01	.9894E-04	-.9687E+00	.5865E-02	.5505E-04	.9161E-05	-.7654E+01	.1550E+01
3	.3884E+01	.1201E+02	.2736E+01	.7456E-04	-.5078E+00	.1231E-02	.5894E-04	-.1171E+00	-.7654E+01	.1519E+01
4	.5632E+01	.1011E+02	.2796E+01	.4737E-04	-.6784E+00	.1567E-01	.2551E-04	-.1065E+00	-.8291E+01	.1525E+01
5	.9188E+01	.9069E+01	.2805E+01	.2597E-04	-.1084E+01	.1951E-01	.1287E-04	.2804E+00	-.8445E+01	.1539E+01
6	.1172E+02	.8266E+01	.2735E+01	.1005E-04	-.1574E+01	.8454E-01	.9027E-05	.7555E+00	-.7492E+01	.1504E+01
7	.1808E+02	.7786E+01	.2678E+01	.1045E-04	-.2479E+01	.2714E+00	.5765E-05	.1760E+01	-.7464E+01	.1549E+01
8	.2265E+02	.7454E+01	.2547E+01	.7707E-05	-.3375E+01	.5678E+00	.4761E-05	.3296E+01	-.7740E+01	.1547E+01
9	.2578E+02	.7108E+01	.2384E+01	.6667E-05	-.4025E+01	.2656E+01	[illegible]	.5994E+01	-.8424E+01	.1545E+01
10	.2716E+02	.6786E+01	.2258E+01	.6215E-05	-.4484E+01	.3914E+01	.9491E-05	.4075E+01	-.9117E+01	.1544E+01
11	.2812E+02	.6437E+01	.2095E+01	.5918E-05	-.4846E+01	.5447E+01	.9648E-05	.3851E+01	-.9804E+01	.1541E+01
12	.2762E+02	.6085E+01	.1966E+01	.5936E-05	-.4926E+01	.6447E+01	.9511E-05	.3763E+01	-.9894E+01	.1539E+01
13	.2572E+02	.5721E+01	.1857E+01	.6196E-05	-.4781E+01	.7560E+01	.2784E-05	.2615E+01	-.9404E+01	.1536E+01
14	.2282E+02	.5351E+01	.1763E+01	.6692E-05	-.4557E+01	.7675E+01	.1984E-05	.2028E+01	-.7857E+01	.1376E+01
15	.2032E+02	.5055E+01	.1709E+01	.7191E-05	-.4339E+01	.7154E+01	.1149E-05	.1019E+01	-.6944E+01	.1378E+01
16	.1818E+02	.4717E+01	.1663E+01	.7844E-05	-.4214E+01	.7551E+01	.9474E-06	.5616E+00	-.5324E+01	.1386E+01
17	.1689E+02	.4457E+01	.1651E+01	.8394E-05	-.4194E+01	.7178E+01	.1990E-06	.1964E+00	-.4317E+01	.1384E+01
18	.1565E+02	.4244E+01	.1646E+01	.8957E-05	[illegible]	.6574E+01	.1614E-06	.9615E-01	-.3877E+01	.1386E+01
19	.1449E+02	.3961E+01	.1645E+01	.9607E-05	-.4113E+01	.6711E+01	.9164E-06	-.3471E-01	-.3408E+01	.1354E+01
20	.1340E+02	.3728E+01	.1651E+01	.1071E-04	-.4104E+01	.6494E+01	.9584E-06	-.2867E+00	-.2816E+01	.1370E+01
21	.1280E+02	.3594E+01	.1680E+01	.1051E-04	-.4194E+01	.6569E+01	.1919E-05	-.4970E+00	-.2524E+01	[illegible]
22	.1218E+02	.3364E+01	.1729E+01	.1059E-04	-.4267E+01	.6114E+01	.1871E-05	-.6410E+00	-.1878E+01	[illegible]
23	.1184E+02	.3234E+01	.1803E+01	.1062E-04	-.4270E+01	.6087E+01	.1119E-05	-.9957E+00	-.1515E+01	.1297E+01
24	.1145E+02	.3104E+01	.1878E+01	.9715E-05	-.4354E+01	.5749E+01	.2408E-05	-.8919E+00	-.1419E+01	.1276E+01
25	.1097E+02	.2987E+01	.1957E+01	.9559E-05	-.4427E+01	.5464E+01	.2874E-05	-.9747E+00	-.1298E+01	.1256E+01
26	.1049E+02	.2872E+01	.2049E+01	.9796E-05	-.4474E+01	.5114E+01	.3754E-05	-.9574E+00	-.1174E+01	.1249E+01
27	.9806E+01	.2762E+01	.2134E+01	.1018E-04	-.4587E+01	.5718E+01	.9474E-05	-.9755E+00	-.1094E+01	.1234E+01
28	.9001E+01	.2658E+01	.2238E+01	.1094E-04	-.4494E+01	.4708E+01	.5781E-05	-.1215E+01	-.6995E+00	.1204E+01
29	.8304E+01	.2619E+01	.2407E+01	.1149E-04	-.4248E+01	.4678E+01	.7016E-05	-.1516E+01	-.2099E+00	.1181E+01

30	.7591E+01	.2596E+01	.2605E+01	.1164E-09	-.9[illegible]E+01	.9537E+01	.[illegible]E-05	-.1534E+01	-.2196E+00	.1156E+01		
31	.6838E+01	.2564E+01	.2814E+01	.1174E-09	-.3[illegible]E+01	.[illegible]E+01	.[illegible]E-05	-.15[illegible]E+01	-.1305E+00	.1124E+01		
32	.6131E+01	.2551E+01	.3004E+01	.1187E-09	-.3[illegible]E+01	.[illegible]E+01	.[illegible]E-05	-.[illegible]E+01	-.4706E-01	.1106E+01		
33	.5444E+01	.2544E+01	.3527E+01	.1[illegible]E-09	-.3[illegible]E+01	.[illegible]E+01	.[illegible]E-05	-.1[illegible]E+01	.8986E-01	.1076E+01		
34	.4853E+01	.2562E+01	.3649E+01	.1[illegible]E-09	-.2[illegible]E+01	.[illegible]E+01	.[illegible]E-05	-.1[illegible]E+01	.1942E+00	.1[illegible]E+01		
35	.3934E+01	.2[illegible]E+01	.[illegible]E+01	.1[illegible]E-09	-.2[illegible]E+01	.[illegible]E+01	.1[illegible]E-04	.1[illegible]E+01	.1[illegible]E+00	.1[illegible]E+01		
36	.3[illegible]E+01	.[illegible]E+01	.[illegible]E+01	.1[illegible]E-09	.1[illegible]E+01	.[illegible]E+01	.1[illegible]E-04	.1[illegible]E+01	.3[illegible]E+00	.1[illegible]E+01		
37	.2624E+01	.2[illegible]E+01	.[illegible]E+01	.1[illegible]E-09	.1[illegible]E+01	.[illegible]E+01	.[illegible]E-04	.[illegible]E+01	.4[illegible]E+00	.1[illegible]E+01		
38	.2058E+01	.2[illegible]E+01	.[illegible]E+01	.[illegible]E-09	.[illegible]E+01	.[illegible]E+01	.[illegible]E-04	.[illegible]E+01	.[illegible]E+00	.1[illegible]E+01		
39	.1629E+01	.3[illegible]E+01	.[illegible]E+01	.[illegible]E-09	.[illegible]E+01	.[illegible]E+01	.[illegible]E-04	.[illegible]E+01	.[illegible]E+00	.[illegible]E+01		
40	.1335E+01	.3[illegible]E+01	.[illegible]E+01	.[illegible]E-09	.[illegible]E+01	.[illegible]E+01	.[illegible]E-04	.[illegible]E+01	.[illegible]E+00	.[illegible]E+01		
41	.1056E+01	.[illegible]E+01	.[illegible]E+01	.[illegible]E-09	.[illegible]E+01	.[illegible]E+01	.[illegible]E-04	.[illegible]E+00	.[illegible]E+00	.[illegible]E+01		
42	.9216E+00	.5[illegible]E+01	.[illegible]E+01	.[illegible]E-09	.[illegible]E+01	.[illegible]E+01	.[illegible]E-04	.[illegible]E+00	.[illegible]E+00	.[illegible]E+01		
43	.8816E+00	.6[illegible]E+01	.[illegible]E+01	.[illegible]E-09	.[illegible]E+01	.[illegible]E+01	.[illegible]E-04	.[illegible]E+01	.[illegible]E+01	.[illegible]E+01		
44	.8834E+00	.7[illegible]E+01	.[illegible]E+01	.[illegible]E-09	.[illegible]E+01	.[illegible]E+01	.[illegible]E-04	.[illegible]E+01	.[illegible]E+01	.[illegible]E+01		
45	.9884E+00	.9[illegible]E+01	.[illegible]E+01	.[illegible]E-09	.[illegible]E+00	.[illegible]E+00	.[illegible]E-05	.[illegible]E+00	.[illegible]E+01	.[illegible]E+01		
46	.1210E+01	.1[illegible]E+02	.[illegible]E+01	0.	.[illegible]E+00	0.	0.	-.9961E-01	.[illegible]E+01	.1270E+01		

SECOND PASS -- 13

IST	P/P1INF	RHO/RHOINF	U/U1INF	V/U1INF	E1/E1INF	S/S1INF	HT/HT1INF	MACH	LAMDA1/U1INF	LAMDA2/U1INF	CP
1	.2942E+01	.1854E+01	.8[illegible]E+00	-.2[illegible]E-01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.8[illegible]E+00	.2[illegible]E-01	.9663E+00
2	.2942E+01	.1855E+01	.8[illegible]E+00	-.2[illegible]E-01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.8[illegible]E+00	.2[illegible]E-01	.9664E+00
3	.2943E+01	.1856E+01	.8[illegible]E+00	-.2[illegible]E-01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.8[illegible]E+00	.[illegible]E-02	.9671E+00
4	.2945E+01	.1861E+01	.8[illegible]E+00	-.[illegible]E-02	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.8[illegible]E+00	-.1[illegible]E-01	.9681E+00
5	.2951E+01	.1864E+01	.8[illegible]E+00	.1[illegible]E-01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.8[illegible]E+00	.1[illegible]E-01	.9699E+00
6	.2955E+01	.1869E+01	.8[illegible]E+00	.5[illegible]E-01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.8[illegible]E+00	.3[illegible]E-01	.9686E+00
7	.2957E+01	.1865E+01	.8[illegible]E+00	.5[illegible]E-01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.8[illegible]E+00	.[illegible]E-01	.9694E+00
8	.2956E+01	.1865E+01	.8[illegible]E+00	.1[illegible]E+00	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.9[illegible]E+00	.2[illegible]E+00	.9694E+00
9	.2954E+01	.1854E+01	.7[illegible]E+00	.1[illegible]E+00	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.9[illegible]E+00	.2[illegible]E+00	.9686E+00
10	.2638E+01	.1984E+01	.8[illegible]E+00	.2[illegible]E+00	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.9[illegible]E+00	.1[illegible]E+00	.9334E+00
11	.2701E+01	.2018E+01	.8[illegible]E+00	.2[illegible]E+00	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.8[illegible]E+00	.7[illegible]E-01	.9564E+00
12	.2778E+01	.2064E+01	.8[illegible]E+00	.2[illegible]E+00	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.7[illegible]E+00	-.8[illegible]E-01	.9844E+00
13	.2884E+01	.2113E+01	.7[illegible]E+00	.2[illegible]E+00	.2[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.5[illegible]E+00	-.1[illegible]E+00	.1[illegible]E+00
14	.2994E+01	.2149E+01	.7[illegible]E+00	.2[illegible]E+00	.2[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.5[illegible]E+00	-.2[illegible]E+00	.6371E+00
15	.2973E+01	.2153E+01	.7[illegible]E+00	.2[illegible]E+00	.2[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.5[illegible]E+00	-.3[illegible]E+00	.6445E+00
16	.2941E+01	.2134E+01	.7[illegible]E+00	.2[illegible]E+00	.2[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.5[illegible]E+00	-.3[illegible]E+00	.6534E+00
17	.2904E+01	.2093E+01	.7[illegible]E+00	.2[illegible]E+00	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.4[illegible]E+00	-.2[illegible]E+00	.6097E+00
18	.2794E+01	.2033E+01	.7[illegible]E+00	.2[illegible]E+00	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.4[illegible]E+00	-.1[illegible]E+00	.5718E+00
19	.2600E+01	.1965E+01	.7[illegible]E+00	.2[illegible]E+00	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.4[illegible]E+00	-.1[illegible]E+00	.5[illegible]E+00
20	.2458E+01	.1881E+01	.7[illegible]E+00	.1[illegible]E+00	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.4[illegible]E+00	-.1[illegible]E+00	.4[illegible]E+00
21	.2311E+01	.1799E+01	.7[illegible]E+00	.1[illegible]E+00	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.4[illegible]E+00	-.1[illegible]E+00	.4[illegible]E+00
22	.2219E+01	.1737E+01	.7[illegible]E+00	.1[illegible]E+00	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.4[illegible]E+00	-.9[illegible]E+00	.3[illegible]E+00
23	.2078E+01	.1648E+01	.6[illegible]E+00	.1[illegible]E+00	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.3[illegible]E+00	-.5[illegible]E+00	.3[illegible]E+00
24	.1995E+01	.1615E+01	.6[illegible]E+00	.1[illegible]E+00	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.3[illegible]E+00	-.5[illegible]E+00	.2[illegible]E+00
25	.1901E+01	.1557E+01	.6[illegible]E+00	.1[illegible]E+00	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.3[illegible]E+00	-.5[illegible]E+00	.2[illegible]E+00
26	.1868E+01	.1535E+01	.6[illegible]E+00	.1[illegible]E+00	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.3[illegible]E+00	-.5[illegible]E+00	.2[illegible]E+00
27	.1761E+01	.1478E+01	.6[illegible]E+00	.1[illegible]E+00	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.3[illegible]E+00	-.2[illegible]E+00	.1[illegible]E+00
28	.1694E+01	.1413E+01	.6[illegible]E+00	.1[illegible]E+00	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.3[illegible]E+00	-.2[illegible]E+00	.1[illegible]E+00
29	.1513E+01	.1331E+01	.6[illegible]E+00	.1[illegible]E+00	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.2[illegible]E+00	-.1[illegible]E+00	.1[illegible]E+00
30	.1364E+01	.1[illegible]E+01	.5[illegible]E+00	.5[illegible]E-01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.2[illegible]E+00	-.1[illegible]E+00	.1[illegible]E+00
31	.1204E+01	.1157E+01	.5[illegible]E+00	.2[illegible]E-01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.2[illegible]E+00	-.1[illegible]E+00	.7[illegible]E-01
32	.1113E+01	.1064E+01	.5[illegible]E+00	.9[illegible]E-01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.1[illegible]E+00	-.1[illegible]E+00	.5[illegible]E-01
33	.1049E+01	.1[illegible]E+01	.5[illegible]E+00	-.1[illegible]E-01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.1[illegible]E+00	-.1[illegible]E+00	.3[illegible]E-01
34	.9910E+00	.1[illegible]E+01	.5[illegible]E+00	-.1[illegible]E-01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.1[illegible]E+00	-.1[illegible]E+00	.2[illegible]E-01
35	.9771E+00	.9[illegible]E+00	.5[illegible]E+00	-.1[illegible]E-01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.1[illegible]E+00	-.1[illegible]E+00	.1[illegible]E-01
36	.9845E+00	.9[illegible]E+00	.5[illegible]E+00	-.1[illegible]E-01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.1[illegible]E+00	-.1[illegible]E+00	.1[illegible]E-01
37	.1010E+01	.1[illegible]E+01	.5[illegible]E+00	-.1[illegible]E-01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.1[illegible]E+00	-.1[illegible]E+00	.3[illegible]E-01
38	.1024E+01	.1037E+01	.5[illegible]E+00	-.1[illegible]E-01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.1[illegible]E+00	-.1[illegible]E+00	.4[illegible]E-01
39	.1111E+01	.1071E+01	.5[illegible]E+00	.4[illegible]E-01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.1[illegible]E+00	-.1[illegible]E+00	.7[illegible]E-01
40	.1203E+01	.1122E+01	.5[illegible]E+00	.5[illegible]E-01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.1[illegible]E+00	-.1[illegible]E+00	.6[illegible]E-01
41	.1300E+01	.1172E+01	.5[illegible]E+00	.6[illegible]E-01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.1[illegible]E+00	-.1[illegible]E+00	.9[illegible]E-01
42	.1410E+01	.1[illegible]E+01	.5[illegible]E+00	.9[illegible]E-01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.1[illegible]E+00	-.1[illegible]E+00	.1[illegible]E+00
43	.1504E+01	.1[illegible]E+01	.5[illegible]E+00	.1[illegible]E+00	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.1[illegible]E+00	-.1[illegible]E+00	.1[illegible]E+00
44	.1588E+01	.1294E+01	.5[illegible]E+00	.1[illegible]E+00	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.1[illegible]E+00	-.1[illegible]E+00	.1[illegible]E+00
45	.1615E+01	.1[illegible]E+01	.5[illegible]E+00	.1[illegible]E+00	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.1[illegible]E+00	-.1[illegible]E+00	.1[illegible]E+00
46	.1614E+01	.1[illegible]E+01	.5[illegible]E+00	.1[illegible]E+00	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.1[illegible]E+00	-.1[illegible]E+00	.1[illegible]E+00

IST	JACOBIAN	X	Y	DXI/DT	DXI/DX	DXI/DY	DETA/DT	DETA/DX	DETA/DY	EI/EIINF
1	.2353E+01	.1700E+02	.2607E+01	0.	-.2374E+00	0.	0.	.2626E-02	-.8048E+01	.1305E+01
2	.3216E+01	.1404E+02	.2607E+01	.8511E-04	-.4024E+00	.1136E-02	.9461E-04	[illegible]	-.8026E+01	.1304E+01
3	.4082E+01	.1201E+02	.2609E+01	.6514E-04	-.5074E+00	.3551E-02	[illegible]	[illegible]	-.8045E+01	.1304E+01
4	.5901E+01	.1016E+02	.2678E+01	[illegible]	.6775E+00	[illegible]	[illegible]	[illegible]	[illegible]	.1313E+01
5	.9596E+01	[illegible]	[illegible]	[illegible]	.1044E+01	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
6	.1245E+02	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
7	.1918E+02	.7764E+01	.2594E+01	.9304E-05	[illegible]	[illegible]	[illegible]	.1044E+01	[illegible]	[illegible]
8	.2438E+02	.7384E+01	.2404E+01	.7194E-05	[illegible]	.1554E+01	.5404E-05	.5684E+01	-.9075E+01	.1534E+01
9	.2828E+02	.7019E+01	.2241E+01	[illegible]	-.3841E+01	.2654E+01	.4898E-05	.4555E+01	-.1047E+02	[illegible]
10	.3105E+02	.6644E+01	.2084E+01	.5904E-05	[illegible]	[illegible]	.4494E-05	.4735E+01	-.1157E+02	.1354E+01
11	.3298E+02	.6249E+01	.1954E+01	.5014E-05	-.4607E+01	.6034E+01	[illegible]	.4154E+01	-.1318E+02	.1334E+01
12	.3142E+02	.5845E+01	.1864E+01	[illegible]	-.4641E+01	.7204E+01	.3374E-05	.3974E+01	-.1278E+02	.1351E+01
13	.2775E+02	.5435E+01	.1684E+01	.5584E-05	[illegible]	.7404E+01	[illegible]	.3224E+01	-.1143E+02	.1345E+01
14	.2417E+02	.5021E+01	.1571E+01	.6214E-05	-.4410E+01	.7484E+01	[illegible]	.2251E+01	-.9227E+01	.1346E+01
15	.2151E+02	.4674E+01	.1498E+01	.6679E-05	.4574E+01	.7174E+01	.1378E-05	.1504E+01	-.7454E+01	.1344E+01
16	.1994E+02	.4324E+01	.1431E+01	.7254E-05	.4248E+01	[illegible]	[illegible]	.9145E+00	-.5937E+01	.1374E+01
17	.1814E+02	.4053E+01	.1405E+01	.7544E-05	.4593E+01	.6764E+01	.5774E-06	.4684E+00	-.4953E+01	.1367E+01
18	.1690E+02	.3784E+01	.1374E+01	.7994E-05	.4848E+01	.6558E+01	[illegible]	.5910E+00	-.4515E+01	.1355E+01
19	.1575E+02	.3519E+01	.1357E+01	.8184E-05	.4571E+01	.6408E+01	.8015E-06	.3017E+00	-.4075E+01	.1335E+01
20	.1499E+02	.3264E+01	.1341E+01	.8144E-05	-.4484E+01	.6364E+01	.1240E-05	-.1885E-01	-.3378E+01	.1313E+01
21	.1467E+02	.3066E+01	.1358E+01	.7694E-05	-.4578E+01	.6354E+01	.1597E-05	-.2787E+00	-.2824E+01	.1289E+01
22	.1442E+02	.2875E+01	.1379E+01	.7384E-05	.4779E+01	.6375E+01	.1864E-05	-.5501E+00	-.2311E+01	.1264E+01
23	.1446E+02	.2744E+01	.1435E+01	.6274E-05	-.5445E+01	.6374E+01	.1904E-05	-.7849E+00	-.1864E+01	.1244E+01
24	.1417E+02	.2621E+01	.1487E+01	.5444E-05	[illegible]	.6254E+01	[illegible]	.7715E+00	-.1777E+01	.1254E+01
25	.1373E+02	.2497E+01	.1594E+01	[illegible]	.5456E+01	.6048E+01	.2167E-05	-.7725E+00	-.1669E+01	.1221E+01
26	.1319E+02	.2378E+01	.1664E+01	.5024E-05	.5546E+01	[illegible]	[illegible]	-.7855E+00	-.1550E+01	.1264E+01
27	.1255E+02	.2267E+01	.1661E+01	.5604E-05	.5634E+01	[illegible]	[illegible]	-.8054E+00	-.1425E+01	.1191E+01
28	.1176E+02	.2150E+01	.1728E+01	.5144E-05	.5644E+01	[illegible]	.3734E-05	-.1204E+01	-.8974E+00	.1164E+01
29	.1115E+02	.2109E+01	.1875E+01	.5114E-05	.5644E+01	.4388E+01	.4364E-05	-.1764E+01	-.4164E+00	.1137E+01
30	.1023E+02	.2076E+01	.2094E+01	.4974E-05	.5435E+01	.4591E+01	.4864E-05	-.1797E+01	-.3645E+00	.1104E+01
31	.9256E+01	.2038E+01	[illegible]	.4614E-05	.5142E+01	.4188E+01	.5144E-05	-.1864E+01	-.2807E+00	.1064E+01
32	.8278E+01	.2015E+01	.2447E+01	.4094E-05	-.4817E+01	.3864E+01	[illegible]	-.1901E+01	-.2155E+00	.1025E+01
33	.7275E+01	.1980E+01	.2685E+01	.3454E-05	-.4473E+01	.3494E+01	[illegible]	-.1994E+01	-.8541E-01	.1006E+01
34	.6274E+01	.1991E+01	.2954E+01	.3051E-05	[illegible]	.3116E+01	.5424E-05	-.2035E+01	.1546E-01	.9884E+00
35	.5275E+01	.1990E+01	.3334E+01	.3314E-05	-.3448E+01	.2714E+01	.6571E-05	-.1855E+01	-.5456E-01	.9865E+00
36	.4363E+01	.1970E+01	.3694E+01	.4461E-05	.2448E+01	.2444E+01	[illegible]	-.1925E+01	.1178E+00	.9517E+00
37	.3425E+01	.2044E+01	.4215E+01	.9164E-05	.2445E+01	.2124E+01	.1984E-04	-.1875E+01	.2425E+00	.1024E+01
38	.2611E+01	.2114E+01	.4704E+01	.1704E-04	.1648E+01	.1864E+01	[illegible]	-.1554E+01	.1144E+00	.1018E+01
39	.1912E+01	.2154E+01	.5464E+01	.3204E-04	-.1256E+01	.1484E+01	.4945E-04	-.1974E+01	.2351E+00	.1046E+01
40	.1456E+01	.2354E+01	.6351E+01	.5644E-04	.6876E+00	.1357E+01	.5997E-04	-.1964E+01	.7755E+00	.1064E+01
41	.9766E+00	.3197E+01	.7417E+01	.7044E-04	.2548E-01	[illegible]	[illegible]	-.5674E+00	.7451E+00	.1164E+01
42	.9246E+00	.3457E+01	.8511E+01	.6704E-04	.2778E+00	[illegible]	[illegible]	-.7014E+00	.8551E+00	.1151E+01
43	.9051E+00	.5124E+01	.8754E+01	.9604E-04	[illegible]	[illegible]	[illegible]	-.2114E+00	.1515E+01	.1194E+01
44	.9621E+00	.7164E+01	.8774E+01	.2144E-04	[illegible]	[illegible]	[illegible]	.9654E+00	.1885E+01	.1255E+01
45	.9307E+00	.9645E+01	.8176E+01	.7644E-05	[illegible]	[illegible]	[illegible]	.3655E+00	.1504E+01	.1250E+01
46	.1262E+01	.1044E+02	.7994E+01	0.	.8815E+00	.7173E-13	0.	-.5764E-01	.1931E+01	.1258E+01

SECOND INDEX= 14

IST	P/PINF	RHO/RINF	U/QINF	V/QINF	ET/ETINF	S/SINF	HT/HTINF	MACH	UNRM/QINF	VTAN/QINF	CP
1	.2411E+01	.1854E+01	.8507E+00	-.2450E-01	.1785E+01	.1017E+01	.1013E+01	.1525E+01	-.8507E+00	.2464E-01	.4616E+00
2	.2412E+01	.1855E+01	.8500E+00	-.2454E-01	.1787E+01	.1017E+01	.1013E+01	.1521E+01	-.8517E+00	.2435E-01	.4617E+00
3	.2417E+01	.1854E+01	.8244E+00	-.2084E-01	.1788E+01	.1014E+01	.1014E+01	.1517E+01	-.8286E+00	.4114E-02	.4632E+00
4	.2429E+01	.1855E+01	.8236E+00	-.7671E-02	.1784E+01	[illegible]	.1014E+01	.1516E+01	-.8254E+00	-.1744E-01	.4675E+00
5	.2447E+01	.1866E+01	.8165E+00	.1859E-01	.1784E+01	[illegible]	.1011E+01	.1494E+01	-.8185E+00	.1764E-01	.4735E+00
6	.2467E+01	.1875E+01	.8074E+00	.5814E-01	.1784E+01	[illegible]	[illegible]	.1474E+01	-.8254E+00	.3954E-01	.4795E+00
7	.2484E+01	.1884E+01	.7954E+00	.1051E+00	.1784E+01	[illegible]	[illegible]	.1464E+01	-.8455E+00	.8754E-01	.4854E+00
8	.2506E+01	.1909E+01	.7881E+00	.1551E+00	[illegible]	.1024E+01	[illegible]	.1461E+01	-.9154E+00	.2074E+00	.4951E+00
9	.2545E+01	.1934E+01	.7778E+00	.1954E+00	.1847E+01	.1024E+01	[illegible]	[illegible]	-.9907E+00	.2211E+00	[illegible]
10	.2615E+01	.1974E+01	.7662E+00	[illegible]	[illegible]	.1031E+01	[illegible]	[illegible]	-.9284E+00	.1384E+00	.5284E+00
11	.2716E+01	.2054E+01	.7534E+00	[illegible]	[illegible]	[illegible]	[illegible]	.1474E+01	-.8164E+00	.1810E-01	.5616E+00
12	.2854E+01	.2084E+01	.7404E+00	[illegible]	[illegible]	[illegible]	.1011E+01	.1464E+01	-.6944E+00	-.9354E-01	.5917E+00
13	.2931E+01	.2138E+01	.7294E+00	[illegible]	[illegible]	[illegible]	[illegible]	.1394E+01	-.6265E+00	-.1524E+00	.6316E+00
14	.2984E+01	.2164E+01	.7144E+00	[illegible]	[illegible]	[illegible]	[illegible]	.1364E+01	[illegible]	[illegible]	.6484E+00
15	.2976E+01	.2157E+01	.7144E+00	[illegible]	[illegible]	.1014E+01	[illegible]	.1347E+01	-.5788E+00	[illegible]	.6464E+00
16	.2909E+01	.2118E+01	.7155E+00	.2274E+00	.1778E+01	.1014E+01	[illegible]	.1394E+01	-.5157E+00	-.2511E+00	.6234E+00
17	.2791E+01	.2054E+01	.7227E+00	.2244E+00	.1935E+01	.1014E+01	[illegible]	.1354E+01	-.5076E+00	-.2673E+00	.5958E+00

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18	.2637E+01	.1971E+01	.7367E+00	.2104E+00	.1835E+01	.1030E+01	.9875E+00	.1384E+01	-.5564E+00	-.2275E+00	.5353E+00
19	.2464E+01	.1879E+01	.7554E+00	.1[illegible]E+00	.1794E+01	.1[illegible]E+01	.[illegible]E+00	.1[illegible]E+01	-.6006E+00	-.1991E+00	.4788E+00
20	.2293E+01	.1784E+01	.7[illegible]E+00	.1814E+00	.1[illegible]E+01	.1[illegible]E+01	.[illegible]E+00	.1[illegible]E+01	-.5[illegible]E+00	-.1[illegible]E+00	.4229E+00
21	.2135E+01	.1703E+01	.[illegible]E+00	.1704E+00	.1[illegible]E+01	.1[illegible]E+01	.[illegible]E+00	.1[illegible]E+01	-.5702E+00	-.1[illegible]E+00	.3729E+00
22	.2011E+01	.1632E+01	.8[illegible]E+00	.1611E+00	.1[illegible]E+01	.1[illegible]E+01	.[illegible]E+00	.1[illegible]E+01	-.5[illegible]E+00	-.[illegible]E+00	.3[illegible]E+00
23	.1916E+01	.1578E+01	.8[illegible]E+00	.1561E+00	.1[illegible]E+01	.1[illegible]E+01	.[illegible]E+00	.1[illegible]E+01	-.5[illegible]E+00	-.[illegible]E+00	.2[illegible]E+00
24	.1850E+01	.1546E+01	.8[illegible]E+00	.1495E+00	.1[illegible]E+01	.1[illegible]E+01	.[illegible]E+00	.1[illegible]E+01	-.5[illegible]E+00	-.[illegible]E+00	.2779E+00
25	.1802E+01	.1511E+01	.8617E+00	.1457E+00	.1[illegible]E+01	.1[illegible]E+01	.[illegible]E+00	.1[illegible]E+01	-.5[illegible]E+00	-.[illegible]E+00	.2[illegible]E+00
26	.1755E+01	.1485E+01	.8[illegible]E+00	.1401E+00	.1[illegible]E+01	.1[illegible]E+01	.[illegible]E+00	.1[illegible]E+01	-.6[illegible]E+00	-.[illegible]E+00	.2[illegible]E+00
27	.1692E+01	.1[illegible]E+01	.8[illegible]E+00	.1[illegible]E+00	.1[illegible]E+01	.1[illegible]E+01	.[illegible]E+00	.1[illegible]E+01	-.6[illegible]E+00	-.[illegible]E+00	.2[illegible]E+00
28	.1599E+01	.1388E+01	.8[illegible]E+00	.1184E+00	.1[illegible]E+01	.1[illegible]E+01	.[illegible]E+00	.1[illegible]E+01	-.6[illegible]E+00	-.[illegible]E+00	.1[illegible]E+00
29	.1475E+01	.1315E+01	.9[illegible]E+00	.9[illegible]E-01	.1[illegible]E+01	.1[illegible]E+01	.[illegible]E+00	.1[illegible]E+01	-.8[illegible]E+00	-.[illegible]E+01	.1[illegible]E+00
30	.1326E+01	.1229E+01	.9[illegible]E+00	.6[illegible]E-01	.1[illegible]E+01	.1[illegible]E+01	.[illegible]E+00	.1[illegible]E+01	-.9[illegible]E+00	-.[illegible]E+01	.1[illegible]E+00
31	.1156E+01	.1134E+01	.9[illegible]E+00	.3[illegible]E-01	.1[illegible]E+01	.1[illegible]E+01	.[illegible]E+00	.1[illegible]E+01	-.1[illegible]E+01	-.[illegible]E+01	.5[illegible]E-01
32	.1053E+01	.1003E+01	.9[illegible]E+00	.4[illegible]E-02	.1[illegible]E+01	.[illegible]E+00	.[illegible]E+00	.2[illegible]E+01	-.1[illegible]E+01	-.[illegible]E+01	.1[illegible]E-01
33	.9[illegible]E+00	.9955E+00	.1[illegible]E+01	-.1[illegible]E-01	.9[illegible]E+00	.9[illegible]E+00	.[illegible]E+00	.2[illegible]E+01	-.1[illegible]E+01	-.1[illegible]E+01	-.1[illegible]E-01
34	.9[illegible]E+00	.9624E+00	.1[illegible]E+01	-.2[illegible]E-01	.9[illegible]E+00	.9[illegible]E+00	.[illegible]E+00	.2[illegible]E+01	-.1[illegible]E+01	-.1[illegible]E+01	-.2[illegible]E-01
35	.9071E+00	.9503E+00	.1[illegible]E+01	-.2[illegible]E-01	.9[illegible]E+00	.9[illegible]E+00	.[illegible]E+01	.2[illegible]E+01	-.1[illegible]E+01	-.1[illegible]E+01	-.3[illegible]E-01
36	.9175E+00	.9534E+00	.1[illegible]E+01	-.2[illegible]E-01	.9[illegible]E+00	.9[illegible]E+00	.[illegible]E+01	.2[illegible]E+01	-.1[illegible]E+01	-.2[illegible]E+01	-.2[illegible]E-01
37	.9428E+00	.9686E+00	.1[illegible]E+01	-.2[illegible]E-01	.9751E+00	.9867E+00	.1[illegible]E+01	.2150E+01	-.1[illegible]E+01	-.2[illegible]E+01	-.1[illegible]E-01
38	.9806E+00	.9934E+00	.1[illegible]E+01	-.1[illegible]E-01	.9[illegible]E+00	.9[illegible]E+00	.[illegible]E+00	.2[illegible]E+01	-.1[illegible]E+01	-.1[illegible]E+01	-.6[illegible]E-02
39	.1035E+01	.1041E+01	.9[illegible]E+00	-.3[illegible]E-02	.1[illegible]E+01	.9[illegible]E+00	.[illegible]E+00	.2[illegible]E+01	-.1[illegible]E+01	-.1[illegible]E+01	.9[illegible]E-02
40	.1097E+01	.1079E+01	.9[illegible]E+00	.1[illegible]E-01	.1[illegible]E+01	.9[illegible]E+00	.[illegible]E+00	.2[illegible]E+01	-.1[illegible]E+01	-.2[illegible]E+01	.3[illegible]E-01
41	.1184E+01	.1134E+01	.9[illegible]E+00	.4[illegible]E-01	.1[illegible]E+01	.9[illegible]E+00	.[illegible]E+00	.2[illegible]E+01	-.1[illegible]E+01	-.1[illegible]E+01	.6[illegible]E-01
42	.1284E+01	.1186E+01	.9[illegible]E+00	.7[illegible]E-01	.1[illegible]E+01	.1[illegible]E+01	.[illegible]E+00	.1[illegible]E+01	-.1[illegible]E+00	-.[illegible]E+00	.9503E-01
43	.1385E+01	.1228E+01	.9[illegible]E+00	.1[illegible]E+00	.1[illegible]E+01	.1[illegible]E+01	.[illegible]E+00	.1[illegible]E+01	.7[illegible]E+00	-.1[illegible]E+00	.1255E+00
44	.1465E+01	.1255E+01	.8[illegible]E+00	.1393E+00	.1[illegible]E+01	.1[illegible]E+01	.[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.6235E+00	.1513E+00
45	.1499E+01	.1262E+01	.8[illegible]E+00	.1554E+00	.1[illegible]E+01	.1[illegible]E+01	.[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.3579E+00	.1635E+00
46	.1499E+01	.1262E+01	.8900E+00	.1553E+00	.1[illegible]E+01	.1[illegible]E+01	.1015E+01	.1735E+01	.8[illegible]E+00	.1779E+00	.1635E+00

IST	JACOBIAN	X	Y	DXI/DT	DXI/DX	DXI/DY	DETA/DT	DETA/DX	DETA/DY	FI/EIINF
1	.2585E+01	.1700E+02	.2[illegible]E+01	0.	-.2917E+00	-.1[illegible]E+01	0.	.4156E-02	-.8[illegible]E+01	.1304E+01
2	.3549E+01	.1404E+02	.2[illegible]E+01	.6675E-04	-.4[illegible]E+00	.1[illegible]E+01	.1[illegible]E-04	.4527E-04	-.8[illegible]E+01	.1302E+01
3	.4490E+01	.1201E+02	.2[illegible]E+01	.5115E-04	-.5[illegible]E+00	.5[illegible]E+00	.1[illegible]E-04	-.1792E+00	-.8[illegible]E+01	.1301E+01
4	.6470E+01	.1009E+02	.2[illegible]E+01	.3594E-04	-.4[illegible]E+00	.7[illegible]E+01	.1[illegible]E-04	-.2[illegible]E+00	-.9[illegible]E+01	.1301E+01
5	.1044E+02	.9054E+01	.2[illegible]E+01	.1984E-04	-.1[illegible]E+01	.7[illegible]E+01	.[illegible]E-05	.4377E+00	-.9[illegible]E+01	.1311E+01
6	.1390E+02	.8218E+01	.2[illegible]E+01	.1[illegible]E-04	-.1[illegible]E+01	.9[illegible]E+00	.8[illegible]E-05	.1087E+01	-.9[illegible]E+01	.1316E+01
7	.2154E+02	.7726E+01	.2[illegible]E+01	.8[illegible]E-05	-.2[illegible]E+01	.8[illegible]E+00	.6[illegible]E-05	.2[illegible]E+01	-.9[illegible]E+01	.1317E+01
8	.2777E+02	.7326E+01	.2[illegible]E+01	.6[illegible]E-05	.3[illegible]E+01	.1[illegible]E+01	.5[illegible]E-05	.9[illegible]E+01	-.1[illegible]E+02	.1317E+01
9	.3392E+02	.6972E+01	.2[illegible]E+01	.5[illegible]E-05	.3[illegible]E+01	.[illegible]E+01	.4[illegible]E-05	.3[illegible]E+01	-.1[illegible]E+02	.1317E+01
10	.3859E+02	.6505E+01	.1[illegible]E+01	.4[illegible]E-05	.4[illegible]E+01	.5[illegible]E+01	.[illegible]E-05	.5[illegible]E+01	-.1[illegible]E+02	.1316E+01
11	.4019E+02	.6069E+01	.1[illegible]E+01	.4[illegible]E-05	.4[illegible]E+01	.6[illegible]E+01	.[illegible]E-05	.5[illegible]E+01	-.1[illegible]E+02	.1316E+01
12	.3697E+02	.5629E+01	.1[illegible]E+01	.4[illegible]E-05	.4[illegible]E+01	.7[illegible]E+01	.[illegible]E-05	.5[illegible]E+01	-.1[illegible]E+02	.1315E+01
13	.3151E+02	.5186E+01	.1[illegible]E+01	.4[illegible]E-05	.4[illegible]E+01	.7[illegible]E+01	.[illegible]E-05	.4[illegible]E+01	-.1[illegible]E+02	.1317E+01
14	.2736E+02	.4973E+01	.1[illegible]E+01	.5[illegible]E-05	.4[illegible]E+01	.6[illegible]E+01	.[illegible]E-05	.3[illegible]E+01	-.1[illegible]E+02	.1318E+01
15	.2494E+02	.4836E+01	.1[illegible]E+01	.5[illegible]E-05	.4[illegible]E+01	.6[illegible]E+01	.[illegible]E-05	.2[illegible]E+01	-.9[illegible]E+01	.1319E+01
16	.2255E+02	.4806E+01	.1[illegible]E+01	.6[illegible]E-05	.4[illegible]E+01	.6[illegible]E+01	.[illegible]E-05	.1[illegible]E+01	-.7[illegible]E+01	.1317E+01
17	.2194E+02	.5711E+01	.1[illegible]E+01	.6[illegible]E-05	.4[illegible]E+01	.6[illegible]E+01	.[illegible]E-05	.8[illegible]E+00	-.6[illegible]E+01	.1315E+01
18	.2015E+02	.5[illegible]E+01	.1[illegible]E+01	.6[illegible]E-05	.4[illegible]E+01	.6[illegible]E+01	.[illegible]E-05	.8[illegible]E+00	-.5[illegible]E+01	.1315E+01
19	.1878E+02	.5156E+01	.1[illegible]E+01	.6[illegible]E-05	.4[illegible]E+01	.6[illegible]E+01	.[illegible]E-05	.6[illegible]E+00	-.5[illegible]E+01	.1315E+01
20	.1858E+02	.5[illegible]E+01	.1[illegible]E+01	.5[illegible]E-05	.4[illegible]E+01	.6[illegible]E+01	.[illegible]E-05	.[illegible]E+00	-.4[illegible]E+01	.1315E+01
21	.1872E+02	.5[illegible]E+01	.1[illegible]E+01	.4[illegible]E-05	.4[illegible]E+01	.6[illegible]E+01	.[illegible]E-05	.[illegible]E+01	-.3[illegible]E+01	.1314E+01
22	.1922E+02	.5[illegible]E+01	.1[illegible]E+01	.3[illegible]E-05	.4[illegible]E+01	.6[illegible]E+01	.[illegible]E-05	.[illegible]E+00	-.3[illegible]E+01	.1315E+01
23	.2015E+02	.5[illegible]E+01	.1[illegible]E+01	.2[illegible]E-05	.4[illegible]E+01	.6[illegible]E+01	.[illegible]E-05	.[illegible]E+00	-.2[illegible]E+01	.1315E+01
24	.2198E+02	.5[illegible]E+01	.1[illegible]E+01	.2[illegible]E-05	.4[illegible]E+01	.6[illegible]E+01	.[illegible]E-05	.[illegible]E+00	-.2[illegible]E+01	.1315E+01
25	.2427E+02	.5[illegible]E+01	.1[illegible]E+01	.1[illegible]E-05	.4[illegible]E+01	.6[illegible]E+01	.[illegible]E-05	.[illegible]E+00	-.1[illegible]E+01	.1315E+01
26	.2678E+02	.5[illegible]E+01	.1[illegible]E+01	.1[illegible]E-05	.4[illegible]E+01	.6[illegible]E+01	.[illegible]E-05	.[illegible]E+00	-.1[illegible]E+01	.1315E+01
27	.2779E+02	.5[illegible]E+01	.1[illegible]E+01	.1[illegible]E-05	.4[illegible]E+01	.6[illegible]E+01	.[illegible]E-05	.[illegible]E+00	-.1[illegible]E+01	.1315E+01
28	.2735E+02	.5[illegible]E+01	.1[illegible]E+01	.1[illegible]E-05	.4[illegible]E+01	.6[illegible]E+01	.[illegible]E-05	.[illegible]E+00	-.1[illegible]E+01	.1315E+01
29	.2701E+02	.5[illegible]E+01	.1[illegible]E+01	.1[illegible]E-05	.4[illegible]E+01	.6[illegible]E+01	.[illegible]E-05	.[illegible]E+00	-.1[illegible]E+01	.1315E+01
30	.2500E+02	.5[illegible]E+01	.1[illegible]E+01	.1[illegible]E-05	.4[illegible]E+01	.6[illegible]E+01	.[illegible]E-05	.[illegible]E+00	-.1[illegible]E+01	.1315E+01
31	.2418E+02	.5[illegible]E+01	.1[illegible]E+01	.[illegible]E-05	.4[illegible]E+01	.6[illegible]E+01	.[illegible]E-05	.[illegible]E+00	-.1[illegible]E+01	.1315E+01
32	.2208E+02	.5[illegible]E+01	.1[illegible]E+01	.[illegible]E-06	.4[illegible]E+01	.6[illegible]E+01	.[illegible]E-05	.[illegible]E+00	-.1[illegible]E+01	.1315E+01
33	.1117E+02	.5[illegible]E+01	.2[illegible]E+01	.1[illegible]E-07	.4[illegible]E+01	.6[illegible]E+01	.[illegible]E-05	.[illegible]E+00	-.1[illegible]E+01	.1315E+01
34	.9684E+01	.5[illegible]E+01	.2[illegible]E+01	.[illegible]E-06	.4[illegible]E+01	.6[illegible]E+01	.[illegible]E-05	.[illegible]E+00	-.1[illegible]E+01	.1315E+01
35	.8319E+01	.5[illegible]E+01	.2[illegible]E+01	.[illegible]E-06	.4[illegible]E+01	.6[illegible]E+01	.[illegible]E-05	.[illegible]E+00	-.1[illegible]E+01	.1315E+01
36	.6954E+01	.5[illegible]E+01	.2[illegible]E+01	.[illegible]E-06	.4[illegible]E+01	.6[illegible]E+01	.[illegible]E-05	.[illegible]E+00	-.1[illegible]E+01	.1315E+01

37	.553[illegible]E+01	.157[illegible]E+01	.35[illegible]E+01	.72[illegible]E-06	-.3[illegible]E+01	.20[illegible]E+01	.9[illegible]E-05	-.2[illegible]E+01	.1551E+00	.97[illegible]E+00
38	.425[illegible]E+01	.159[illegible]E+01	.90[illegible]E+01	.91[illegible]E-06	-.28[illegible]E+01	.1[illegible]E+01	.[illegible]E-05	-.2[illegible]E+01	-.3[illegible]E-01	.98[illegible]E+00
39	.299[illegible]E+01	.155[illegible]E+01	.98[illegible]E+01	.1[illegible]E-06	-.29[illegible]E+01	.1[illegible]E+01	.2[illegible]E-06	[illegible]E+01	.59[illegible]E-01	.99[illegible]E+00
40	.208[illegible]E+01	.163[illegible]E+01	.51[illegible]E+01	.2[illegible]E-06	-.2[illegible]E+01	.11[illegible]E+01	.3[illegible]E-06	-.[illegible]E+01	.71[illegible]E+00	.101[illegible]E+01
41	.113[illegible]E+01	.220[illegible]E+01	.7[illegible]E+01	.5[illegible]E-06	-.2[illegible]E+01	.[illegible]E+01	.6[illegible]E-06	-.15[illegible]E+01	.68[illegible]E+00	.10[illegible]E+01
42	.107[illegible]E+01	.28[illegible]E+01	.84[illegible]E+01	.1[illegible]E-06	-.[illegible]E+01	.[illegible]E+01	.2[illegible]E-06	-.11[illegible]E+01	.3[illegible]E+01	.10[illegible]E+01
43	.109[illegible]E+01	.42[illegible]E+01	.95[illegible]E+01	.3[illegible]E-06	.[illegible]E+00	.81[illegible]E+00	-.5[illegible]E-06	-.99[illegible]E+00	.19[illegible]E+01	.11[illegible]E+01
44	.129[illegible]E+01	.651[illegible]E+01	.[illegible]E+01	.61[illegible]E-05	.5[illegible]E+00	.[illegible]E+00	.[illegible]E-05	.9[illegible]E+00	.29[illegible]E+01	.116[illegible]E+01
45	.101[illegible]E+01	.88[illegible]E+01	.68[illegible]E+01	-.77[illegible]E-05	.55[illegible]E+00	.[illegible]E+00	.1[illegible]E-05	.51[illegible]E+00	.19[illegible]E+01	.11[illegible]E+01
46	.140[illegible]E+01	.109[illegible]E+01	.86[illegible]E+01	0.	.78[illegible]E+00	-.5[illegible]E-06	15 0.	.49[illegible]E 01	.17[illegible]E+01	.11[illegible]E+01

SECOND INDEX= 15

1ST	P/P1[illegible]	RHO/RHO[illegible]	U/Q1[illegible]	V/Q1[illegible]	[illegible]T/T[illegible]	S/[illegible]	MT/MT1[illegible]	MACH	LAMAR/Q1[illegible]	VAMAR/Q1[illegible]	CP
1	.24[illegible]E+01	.189[illegible]E+01	.[illegible]E+00	-.[illegible]E 01	.17[illegible]E+01	.10[illegible]E+01	.1[illegible]E+01	.155[illegible]E+01	-.[illegible]E+00	.[illegible]E 01	.[illegible]E+00
2	.24[illegible]E+01	.189[illegible]E+01	.[illegible]E+00	.[illegible]E 01	.17[illegible]E+01	.10[illegible]E+01	.1[illegible]E+01	.155[illegible]E+01	-.[illegible]E+00	.[illegible]E-01	.[illegible]E+00
3	.239[illegible]E+01	.189[illegible]E+01	.[illegible]E+00	.[illegible]E 01	.17[illegible]E+01	.10[illegible]E+01	.1[illegible]E+01	.155[illegible]E+01	-.[illegible]E+00	.[illegible]E 02	.[illegible]E+00
4	.23[illegible]E+01	.18[illegible]E+01	.[illegible]E+00	.[illegible]E 02	.17[illegible]E+01	.10[illegible]E+01	.1[illegible]E+01	.155[illegible]E+01	-.[illegible]E+00	-.[illegible]E 01	.[illegible]E+00
5	.23[illegible]E+01	.187[illegible]E+01	.[illegible]E+00	.[illegible]E 01	.17[illegible]E+01	.10[illegible]E+01	.1[illegible]E+01	.156[illegible]E+01	-.[illegible]E+00	.17[illegible]E-01	.[illegible]E+00
6	.23[illegible]E+01	.185[illegible]E+01	.[illegible]E+00	.[illegible]E 01	.17[illegible]E+01	.10[illegible]E+01	.1[illegible]E+01	.149[illegible]E+01	-.[illegible]E+00	.[illegible]E-01	.[illegible]E+00
7	.24[illegible]E+01	.189[illegible]E+01	.[illegible]E+00	.[illegible]E+00	.17[illegible]E+01	.10[illegible]E+01	.1[illegible]E+01	.148[illegible]E+01	-.[illegible]E+00	.[illegible]E-01	.[illegible]E+00
8	.24[illegible]E+01	.187[illegible]E+01	.[illegible]E+00	.[illegible]E+00	.17[illegible]E+01	.10[illegible]E+01	.1[illegible]E+01	.147[illegible]E+01	-.[illegible]E+00	.[illegible]E+00	.[illegible]E+00
9	.25[illegible]E+01	.191[illegible]E+01	.[illegible]E+00	.[illegible]E+00	.18[illegible]E+01	.10[illegible]E+01	.1[illegible]E+01	.146[illegible]E+01	-.[illegible]E+00	.17[illegible]E+00	.[illegible]E+00
10	.26[illegible]E+01	.197[illegible]E+01	.[illegible]E+00	.[illegible]E+00	.18[illegible]E+01	.10[illegible]E+01	.1[illegible]E+01	.145[illegible]E+01	-.[illegible]E+00	.[illegible]E 01	.[illegible]E+00
11	.27[illegible]E+01	.20[illegible]E+01	.[illegible]E+00	.[illegible]E+00	.19[illegible]E+01	.10[illegible]E+01	.1[illegible]E+01	.14[illegible]E+01	-.[illegible]E+00	.[illegible]E-02	.[illegible]E+00
12	.28[illegible]E+01	.211[illegible]E+01	.[illegible]E+00	.[illegible]E+00	.19[illegible]E+01	.10[illegible]E+01	.1[illegible]E+01	.13[illegible]E+01	-.[illegible]E+00	-.[illegible]E 01	.[illegible]E+00
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16	.28[illegible]E+01	.209[illegible]E+01	.[illegible]E+00	.[illegible]E+00	.19[illegible]E+01	.10[illegible]E+01	.9[illegible]E+00	.13[illegible]E+01	-.[illegible]E+00	-.[illegible]E+00	.[illegible]E+00
17	.27[illegible]E+01	.201[illegible]E+01	.[illegible]E+00	.[illegible]E+00	.18[illegible]E+01	.10[illegible]E+01	.9[illegible]E+00	.13[illegible]E+01	-.[illegible]E+00	-.[illegible]E+00	.[illegible]E+00
18	.25[illegible]E+01	.191[illegible]E+01	.[illegible]E+00	.[illegible]E+00	.17[illegible]E+01	.10[illegible]E+01	.9[illegible]E+00	.14[illegible]E+01	-.[illegible]E+00	-.[illegible]E+00	.[illegible]E+00
19	.23[illegible]E+01	.180[illegible]E+01	.[illegible]E+00	.[illegible]E+00	.16[illegible]E+01	.10[illegible]E+01	.9[illegible]E+00	.14[illegible]E+01	-.[illegible]E+00	-.[illegible]E+00	.[illegible]E+00
20	.21[illegible]E+01	.17[illegible]E+01	.[illegible]E+00	.[illegible]E+00	.14[illegible]E+01	.10[illegible]E+01	.9[illegible]E+00	.15[illegible]E+01	-.[illegible]E+00	-.[illegible]E+00	.[illegible]E+00
21	.199[illegible]E+01	.16[illegible]E+01	.[illegible]E+00	.[illegible]E+00	.13[illegible]E+01	.10[illegible]E+01	.9[illegible]E+00	.15[illegible]E+01	-.[illegible]E+00	-.[illegible]E+00	.[illegible]E+00
22	.187[illegible]E+01	.15[illegible]E+01	.[illegible]E+00	.[illegible]E+00	.12[illegible]E+01	.10[illegible]E+01	.9[illegible]E+00	.16[illegible]E+01	-.[illegible]E+00	-.[illegible]E+00	.[illegible]E+00
23	.179[illegible]E+01	.151[illegible]E+01	.[illegible]E+00	.[illegible]E+00	.12[illegible]E+01	.10[illegible]E+01	.9[illegible]E+00	.16[illegible]E+01	-.[illegible]E+00	-.[illegible]E+00	.[illegible]E+00
24	.175[illegible]E+01	.148[illegible]E+01	.[illegible]E+00	.[illegible]E+00	.12[illegible]E+01	.10[illegible]E+01	.9[illegible]E+00	.17[illegible]E+01	-.[illegible]E+00	-.[illegible]E+00	.[illegible]E+00
25	.173[illegible]E+01	.147[illegible]E+01	.[illegible]E+00	.[illegible]E+00	.12[illegible]E+01	.10[illegible]E+01	.9[illegible]E+00	.17[illegible]E+01	-.[illegible]E+00	-.[illegible]E+00	.[illegible]E+00
26	.171[illegible]E+01	.146[illegible]E+01	.[illegible]E+00	.[illegible]E+00	.12[illegible]E+01	.10[illegible]E+01	.9[illegible]E+00	.17[illegible]E+01	-.[illegible]E+00	-.[illegible]E+00	.[illegible]E+00
27	.169[illegible]E+01	.144[illegible]E+01	.[illegible]E+00	.[illegible]E+00	.12[illegible]E+01	.10[illegible]E+01	.9[illegible]E+00	.17[illegible]E+01	-.[illegible]E+00	-.[illegible]E+00	.[illegible]E+00
28	.162[illegible]E+01	.140[illegible]E+01	.[illegible]E+00	.[illegible]E+00	.11[illegible]E+01	.10[illegible]E+01	.9[illegible]E+00	.18[illegible]E+01	-.[illegible]E+00	-.[illegible]E+00	.[illegible]E+00
29	.155[illegible]E+01	.134[illegible]E+01	.[illegible]E+00	.[illegible]E+00	.11[illegible]E+01	.10[illegible]E+01	.9[illegible]E+00	.17[illegible]E+01	-.[illegible]E+00	-.[illegible]E+00	.[illegible]E+00
30	.140[illegible]E+01	.1[illegible]E+01	.[illegible]E+00	.[illegible]E 01	.1[illegible]E+01	.10[illegible]E+01	.[illegible]E+00	.19[illegible]E+01	-.[illegible]E+00	-.[illegible]E+00	.[illegible]E+00
31	.12[illegible]E+01	.11[illegible]E+01	.[illegible]E+00	.[illegible]E 01	.1[illegible]E+01	.[illegible]E+01	.[illegible]E+00	.1[illegible]E+01	-.[illegible]E+00	-.[illegible]E+00	.[illegible]E 01
32	.111[illegible]E+01	.10[illegible]E+01	.[illegible]E+00	.[illegible]E 01	.1[illegible]E+01	.[illegible]E+01	.[illegible]E+00	.[illegible]E+01	-.[illegible]E+00	-.[illegible]E+00	.[illegible]E 01
33	.100[illegible]E+01	.101[illegible]E+01	.[illegible]E+00	.[illegible]E 02	.1[illegible]E+01	.[illegible]E+01	.[illegible]E+00	.[illegible]E+01	-.[illegible]E+00	-.[illegible]E+00	.[illegible]E 02
34	.934[illegible]E+00	.967[illegible]E+00	.101[illegible]E+01	-.17[illegible]E 01	.97[illegible]E+00	.97[illegible]E+00	.1[illegible]E+01	.21[illegible]E+01	-.19[illegible]E+01	-.21[illegible]E+01	-.21[illegible]E 01
35	.908[illegible]E+00	.967[illegible]E+00	.10[illegible]E+01	.18[illegible]E 01	.9[illegible]E+00	.9[illegible]E+00	.1[illegible]E+01	.21[illegible]E+01	-.18[illegible]E+01	-.20[illegible]E+01	-.20[illegible]E 01
36	.912[illegible]E+00	.94[illegible]E+00	.1[illegible]E+01	.17[illegible]E 01	.9[illegible]E+00	.9[illegible]E+00	.1[illegible]E+01	.21[illegible]E+01	-.17[illegible]E+01	-.20[illegible]E+01	-.20[illegible]E 01
37	.93[illegible]E+00	.95[illegible]E+00	.10[illegible]E+01	-.15[illegible]E 01	.9[illegible]E+00	.9[illegible]E+00	.1[illegible]E+01	.21[illegible]E+01	-.[illegible]E+01	-.20[illegible]E+01	-.21[illegible]E 01
38	.96[illegible]E+00	.97[illegible]E+00	.10[illegible]E+01	-.10[illegible]E 01	.9[illegible]E+00	.9[illegible]E+00	.1[illegible]E+01	.21[illegible]E+01	-.[illegible]E+01	-.[illegible]E+01	-.[illegible]E 01
39	.99[illegible]E+00	.10[illegible]E+01	.10[illegible]E+01	-.9[illegible]E 01	.9[illegible]E+00	.9[illegible]E+00	.1[illegible]E+01	.21[illegible]E+01	-.[illegible]E+01	-.[illegible]E+01	-.[illegible]E 01
40	.10[illegible]E+01	.10[illegible]E+01	.[illegible]E+00	.[illegible]E 02	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.[illegible]E+01	-.[illegible]E+01	.[illegible]E+01	.[illegible]E 01
41	.11[illegible]E+01	.11[illegible]E+01	.[illegible]E+00	.[illegible]E 01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.[illegible]E+01	-.[illegible]E+01	.[illegible]E+01	.[illegible]E 01
42	.11[illegible]E+01	.11[illegible]E+01	.[illegible]E+00	.[illegible]E 01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.[illegible]E+01	-.[illegible]E+00	.[illegible]E+01	.[illegible]E 01
43	.12[illegible]E+01	.12[illegible]E+01	.[illegible]E+00	.[illegible]E 01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.[illegible]E+01	.[illegible]E+00	-.[illegible]E+01	.[illegible]E 01
44	.13[illegible]E+01	.12[illegible]E+01	.[illegible]E+00	.[illegible]E+00	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.[illegible]E+01	.[illegible]E+00	.[illegible]E+00	.[illegible]E+00
45	.13[illegible]E+01	.12[illegible]E+01	.[illegible]E+00	.[illegible]E+00	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.[illegible]E+01	.[illegible]E+00	.[illegible]E+00	.[illegible]E+00
46	.13[illegible]E+01	.12[illegible]E+01	.[illegible]E+00	.[illegible]E+00	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.[illegible]E+01	.[illegible]E+00	.[illegible]E+00	.[illegible]E+00

I J	JACOBIAN	X	Y	D[illegible]	D[illegible]	D[illegible]	D[illegible]	D[illegible]/X	D[illegible]/Y	[illegible]/[illegible]
1	.20[illegible]E+01	.170[illegible]E+02	.25[illegible]E+01	0.	.[illegible]E+00	0.	0.	.[illegible]E 02	-.[illegible]E+02	.[illegible]E+01
2	.90[illegible]E+01	.19[illegible]E+02	.25[illegible]E+01	.5[illegible]E 00	.[illegible]E+00	.[illegible]E 01	.[illegible]E 01	.[illegible]E 00	-.[illegible]E+01	.[illegible]E+01
3	.51[illegible]E+01	.12[illegible]E+02	.25[illegible]E+01	.9[illegible]E 00	.[illegible]E+00	.[illegible]E 01	.[illegible]E 01	.[illegible]E+00	-.[illegible]E+02	.[illegible]E+01
4	.73[illegible]E+01	.10[illegible]E+02	.25[illegible]E+01	.[illegible]E 00	.[illegible]E+00	.[illegible]E+00	.[illegible]E 01	.[illegible]E+01	-.[illegible]E+02	.[illegible]E+01
5	.11[illegible]E+02	.90[illegible]E+01	.25[illegible]E+01	.[illegible]E 00	.[illegible]E+00	.[illegible]E+00	.[illegible]E 01	.[illegible]E+01	-.[illegible]E+02	.[illegible]E+01
6	.16[illegible]E+02	.81[illegible]E+01	.25[illegible]E+01	.11[illegible]E 00	.[illegible]E+00	.[illegible]E+00	.[illegible]E 01	.[illegible]E+01	-.[illegible]E+02	.[illegible]E+01

7	.2547E+02	.7688E+01	.2315E+01	.7029E-05	-.2394E+01	.1055E+01	.6406E-05	.2546E+01	-.1176E+02	.1306E+01
8	.3334E+02	.7260E+01	.2186E+01	.5137E-05	-.5084E+01	.2[illegible]E+01	.9861E-05	.9951E-01	-.1456E+02	.1306E+01
9	.4119E+02	.6870E+01	.2070E+01	.3954E-05	-.5048E+01	.1870E+01	.1351E-05	.[illegible]E+01	-.1811E+02	.1314E+01
10	.5053E+02	.6379E+01	.1866E+01	.5[illegible]E-05	-.4814E+01	.5846E+01	.2[illegible]E-05	.[illegible]E+01	-.2794E+02	.1328E+01
11	.4999E+02	.5919E+01	.1711E+01	.5184E-05	-.4994E+01	.6[illegible]E+01	.[illegible]E-05	.7854E+01	-.2[illegible]E+02	.1344E+01
12	.4999E+02	.5444E+01	.1554E+01	.3974E-05	-.4979E+01	.[illegible]E+01	.2564E-05	.6894E+01	-.2073E+02	.1361E+01
13	.3860E+02	.4981E+01	.1403E+01	.5[illegible]E-05	-.4[illegible]E+01	.6854E+01	.[illegible]E-05	.5715E+01	-.1768E+02	.1374E+01
14	.3385E+02	.4611E+01	.1275E+01	.4[illegible]E-05	-.4[illegible]E+01	.6[illegible]E+01	.1[illegible]E-05	.4854E+01	-.1495E+02	.1384E+01
15	.3039E+02	.4149E+01	.1134E+01	.4[illegible]E-05	-.4[illegible]E+01	.6[illegible]E+01	.3[illegible]E-05	.3194E+01	-.1343E+02	.1397E+01
16	.2853E+02	.3744E+01	.1009E+01	.4[illegible]E-05	-.4[illegible]E+01	.6[illegible]E+01	.1[illegible]E-05	.2218E+01	-.9[illegible]E+01	.1404E+01
17	.2756E+02	.3444E+01	.9[illegible]E+00	.4[illegible]E-05	-.4[illegible]E+01	.6[illegible]E+01	.1[illegible]E-05	.1844E+01	-.8[illegible]E+01	.1406E+01
18	.2577E+02	.3154E+01	.9[illegible]E+00	.4[illegible]E-05	-.4[illegible]E+01	.6[illegible]E+01	.1[illegible]E-05	.1774E+01	-.7[illegible]E+01	.1414E+01
19	.2394E+02	.2864E+01	.8[illegible]E+00	.4[illegible]E-05	-.4[illegible]E+01	.5[illegible]E+01	.1[illegible]E-05	.1114E+01	-.6[illegible]E+01	.1429E+01
20	.2246E+02	.2587E+01	.8[illegible]E+00	.4[illegible]E-05	-.4[illegible]E+01	.6[illegible]E+01	.1[illegible]E-05	.7055E+00	-.6[illegible]E+01	.1454E+01
21	.2058E+02	.2381E+01	.8[illegible]E+00	.2[illegible]E-05	-.3[illegible]E+01	.6[illegible]E+01	.1[illegible]E-05	.5299E+00	-.5[illegible]E+01	.1474E+01
22	.2780E+02	.2184E+01	.8[illegible]E+00	.1[illegible]E-05	-.4[illegible]E+01	.7[illegible]E+01	.[illegible]E-06	.7168E-01	-.9[illegible]E+01	.1490E+01
23	.3073E+02	.2055E+01	.8[illegible]E+00	.5[illegible]E-06	-.7[illegible]E+01	.8[illegible]E+01	.6[illegible]E-06	-.1[illegible]E+00	-.3[illegible]E+01	.1[illegible]E+01
24	.3004E+02	.1974E+01	.8[illegible]E+00	.5[illegible]E-06	-.7[illegible]E+01	.7[illegible]E+01	.9[illegible]E-06	-.9[illegible]E+00	-.3[illegible]E+01	.1174E+01
25	.2916E+02	.1823E+01	.8[illegible]E+00	.5[illegible]E-06	-.7[illegible]E+01	.7[illegible]E+01	.5[illegible]E-06	-.9[illegible]E+00	-.3[illegible]E+01	.1174E+01
26	.2814E+02	.1704E+01	.8[illegible]E+00	.1[illegible]E-06	-.7[illegible]E+01	.6[illegible]E+01	.2[illegible]E-06	-.9[illegible]E+00	-.3[illegible]E+01	.1173E+01
27	.2697E+02	.1597E+01	.8[illegible]E+00	.1[illegible]E-06	-.7[illegible]E+01	.6[illegible]E+01	.[illegible]E-06	-.[illegible]E+00	-.3[illegible]E+01	.1164E+01
28	.2777E+02	.1486E+01	.9[illegible]E+00	.9[illegible]E-07	-.8[illegible]E+01	.6[illegible]E+01	.2[illegible]E-06	-.1[illegible]E+01	-.1953E+01	.1153E+01
29	.2867E+02	.1405E+01	.1[illegible]E+01	-.5[illegible]E-07	-.9[illegible]E+01	.6[illegible]E+01	.1[illegible]E-06	-.1[illegible]E+01	-.7578E+00	.1154E+01
30	.2659E+02	.1429E+01	.1193E+01	.1726E-06	-.9[illegible]E+01	.5[illegible]E+01	.1178E-06	-.2516E+01	-.6934E+00	.1111E+01
31	.2401E+02	.1401E+01	.1[illegible]E+01	-.3[illegible]E-06	-.8[illegible]E+01	.5[illegible]E+01	.1[illegible]E-09	-.3[illegible]E+01	-.5[illegible]E+00	.1075E+01
32	.2155E+02	.1580E+01	.1457E+01	-.9[illegible]E-06	-.8[illegible]E+01	.4[illegible]E+01	-.1[illegible]E-04	-.3[illegible]E+01	-.5[illegible]E+00	.1054E+01
33	.1895E+02	.1353E+01	.1649E+01	.5[illegible]E-06	-.7[illegible]E+01	.3[illegible]E+01	.5[illegible]E-06	-.9[illegible]E+01	-.3[illegible]E+00	.9910E+00
34	.1641E+02	.1194E+01	.1918E+01	-.7[illegible]E-06	-.6[illegible]E+01	.2[illegible]E+01	-.9[illegible]E-06	-.9[illegible]E+01	-.2[illegible]E+00	.9640E+00
35	.1460E+02	.1324E+01	.2[illegible]E+01	-.9[illegible]E-06	-.8[illegible]E+01	.2[illegible]E+01	-.7[illegible]E-06	-.9[illegible]E+01	-.3[illegible]E+00	.9591E+00
36	.1224E+02	.1[illegible]E+01	.2[illegible]E+01	-.1[illegible]E-05	-.1[illegible]E+01	.2[illegible]E+01	-.9[illegible]E-06	-.9[illegible]E+01	-.1[illegible]E+00	.9[illegible]E+00
37	.9714E+01	.1[illegible]E+01	.3[illegible]E+01	-.1[illegible]E-05	-.9[illegible]E+01	.1[illegible]E+01	-.9[illegible]E-06	-.5[illegible]E+01	.8[illegible]E-01	.9767E+00
38	.7754E+01	.1[illegible]E+01	.3[illegible]E+01	-.5[illegible]E-06	-.3[illegible]E+01	.1[illegible]E+01	.9[illegible]E-06	-.9[illegible]E+01	-.1[illegible]E+00	.9872E+00
39	.5490E+01	.1[illegible]E+01	.4[illegible]E+01	.[illegible]E-05	-.2[illegible]E+01	.1[illegible]E+01	.5[illegible]E-05	-.9[illegible]E+01	-.7[illegible]E-01	.9[illegible]E+00
40	.3908E+01	.1[illegible]E+01	.5[illegible]E+01	.1[illegible]E-04	-.1[illegible]E+01	.1[illegible]E+01	.2[illegible]E-04	-.5[illegible]E+01	.8[illegible]E-01	.9[illegible]E+00
41	.1791E+01	.1[illegible]E+01	.6[illegible]E+01	.3[illegible]E-04	-.5[illegible]E+00	.[illegible]E+00	.6[illegible]E-04	-.2[illegible]E+01	.7[illegible]E+00	.1[illegible]E+01
42	.1425E+01	.2127E+01	.8[illegible]E+01	.9[illegible]E-04	-.1[illegible]E+00	.9[illegible]E+00	.5[illegible]E-04	-.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01
43	.1135E+01	.3585E+01	.9[illegible]E+01	.3[illegible]E-04	.2[illegible]E+00	.[illegible]E+00	.9[illegible]E-05	-.8[illegible]E+00	.2[illegible]E+01	.1[illegible]E+01
44	.1953E+01	.5975E+01	.9[illegible]E+01	.7[illegible]E-05	.9[illegible]E+00	.8[illegible]E+00	-.9[illegible]E-04	.5[illegible]E+00	.4[illegible]E+01	.1[illegible]E+01
45	.1261E+01	.8544E+01	.9[illegible]E+01	-.1[illegible]E-04	.9[illegible]E+00	.2[illegible]E+00	-.1[illegible]E-03	.3[illegible]E+00	.2[illegible]E+01	.1[illegible]E+01
46	.1654E+01	.1[illegible]E+02	.9[illegible]E+01	0.	.8[illegible]E+00	0.	0.	.1[illegible]E+00	.2[illegible]E+01	.1[illegible]E+01

SECOND INCR = 16

IST	P/P1N	RHO/RHO1N	U/Q1N	V/Q1N	T/T1N	S/S1N	M/M1N	MACH	UBAR/Q1N	VBAR/Q1N	CP
1	.2395E+01	.1815E+01	.8[illegible]E+00	-.2[illegible]E-01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.9[illegible]E+00	.2[illegible]E-01	.4555E+00
2	.2395E+01	.1815E+01	.8[illegible]E+00	-.2[illegible]E-01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.9[illegible]E+00	.2[illegible]E-01	.4554E+00
3	.2372E+01	.1811E+01	.8[illegible]E+00	-.1[illegible]E-01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.8[illegible]E+00	-.1[illegible]E-01	.4987E+00
4	.2347E+01	.1814E+01	.8[illegible]E+00	-.6[illegible]E-02	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.8[illegible]E+00	-.2[illegible]E-01	.4405E+00
5	.2334E+01	.1809E+01	.8[illegible]E+00	.2[illegible]E-01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.8[illegible]E+00	.1[illegible]E-01	.4364E+00
6	.2341E+01	.1804E+01	.8[illegible]E+00	.6[illegible]E-01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.8[illegible]E+00	.5[illegible]E-01	.4385E+00
7	.2361E+01	.1811E+01	.8[illegible]E+00	.1[illegible]E+00	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.8[illegible]E+00	.6[illegible]E-01	.4396E+00
8	.2411E+01	.1814E+01	.7[illegible]E+00	.1[illegible]E+00	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.9[illegible]E+00	.1[illegible]E-01	.4634E+00
9	.2560E+01	.1900E+01	.7805E+00	.2[illegible]E+00	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.9[illegible]E+00	.1[illegible]E+00	.4919E+00
10	.2634E+01	.1978E+01	.7653E+00	.2[illegible]E+00	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.8[illegible]E+00	.5[illegible]E-01	.5324E+00
11	.2771E+01	.2058E+01	.7455E+00	.2[illegible]E+00	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.7[illegible]E+00	.3[illegible]E-01	.5805E+00
12	.2900E+01	.2126E+01	.7300E+00	.2[illegible]E+00	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.7[illegible]E+00	.1[illegible]E-01	.6294E+00
13	.2996E+01	.2164E+01	.7206E+00	.2[illegible]E+00	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.6[illegible]E+00	-.7[illegible]E-01	.6514E+00
14	.3009E+01	.2174E+01	.7151E+00	.2[illegible]E+00	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.6[illegible]E+00	-.9[illegible]E-01	.6554E+00
15	.2956E+01	.2139E+01	.7171E+00	.2[illegible]E+00	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.6[illegible]E+00	-.8[illegible]E+00	.6471E+00
16	.2807E+01	.2[illegible]E+01	.7[illegible]E+00	.2[illegible]E+00	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.6[illegible]E+00	-.1[illegible]E+00	.5911E+00
17	.2623E+01	.1971E+01	.7[illegible]E+00	.2[illegible]E+00	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.6[illegible]E+00	-.1[illegible]E+00	.5512E+00
18	.2423E+01	.1863E+01	.7608E+00	.1[illegible]E+00	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.7[illegible]E+00	-.8[illegible]E-01	.4[illegible]E+00
19	.2231E+01	.1754E+01	.7970E+00	.1[illegible]E+00	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.7[illegible]E+00	-.5[illegible]E-01	.3[illegible]E+00
20	.2054E+01	.1647E+01	.8[illegible]E+00	.1[illegible]E+00	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.7[illegible]E+00	-.3[illegible]E-01	.3[illegible]E+00
21	.1888E+01	.1570E+01	.8[illegible]E+00	.1[illegible]E+00	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.7[illegible]E+00	-.1[illegible]E-01	.2[illegible]E+00
22	.1735E+01	.1510E+01	.8[illegible]E+00	.1[illegible]E+00	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.7[illegible]E+00	.1[illegible]E-01	.2[illegible]E+00
23	.1728E+01	.1497E+01	.8[illegible]E+00	.1[illegible]E+00	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.8[illegible]E+00	.2[illegible]E-01	.2777E+00
24	.1705E+01	.1960E+01	.8[illegible]E+00	.1[illegible]E+00	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.7[illegible]E+00	-.2[illegible]E-01	.2507E+00

25	.1704E+01	.1495E+01	.8899E+00	.1531E+00	.1414E+01	.1094E+01	.1[illegible]E+01	.1747E+01	-.7489E+00	-.2161E+00	.2308E+00
26	.1713E+01	.1496E+01	.8873E+00	.1544E+00	.1402E+01	.1[illegible]E+01	.1[illegible]E+01	.1775E+01	-.7582E+00	-.2086E+00	.2352E+00
27	.1724E+01	.1496E+01	.8846E+00	.1557E+00	.1389E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.7675E+00	-.2009E+00	.2396E+00
28	.1695E+01	.1499E+01	.8819E+00	.1570E+00	.1376E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.6988E+00	-.6547E+00	.2440E+00
29	.1698E+01	.1501E+01	.8791E+00	.1583E+00	.1363E+01	.1[illegible]E+01	.1[illegible]E+01	.1775E+01	-.1055E+01	-.1331E+01	.2484E+00
30	.1554E+01	.1503E+01	.5607E+00	.1597E+00	.1350E+01	.1[illegible]E+01	.1[illegible]E+01	.1776E+01	-.1146E+01	-.1407E+01	.1961E+00
31	.1419E+01	.1505E+01	.5636E+00	.1610E+00	.1338E+01	.1[illegible]E+01	.1[illegible]E+01	.1893E+01	-.1238E+01	-.1484E+01	.1537E+00
32	.1259E+01	.1504E+01	.9550E+00	.6712E-01	.1199E+01	.1[illegible]E+01	.1[illegible]E+01	.1918E+01	-.1660E+01	-.1561E+01	.8915E-01
33	.1107E+01	.1503E+01	.9737E+00	.2736E-01	.1060E+01	.1[illegible]E+01	.1[illegible]E+01	.2003E+01	-.1978E+01	-.2134E+01	.3986E-01
34	.9954E+00	.1500E+01	.1001E+01	.1119E-01	.9221E+00	.9[illegible]E+00	.9[illegible]E+00	.2[illegible]E+01	-.2[illegible]E+01	-.2[illegible]E+01	-.1[illegible]E-01
35	.9913E+00	.9[illegible]E+00	.1014E+01	-.1119E-01	.9721E+00	.9[illegible]E+00	.1[illegible]E+01	.2[illegible]E+01	-.2[illegible]E+01	-.2[illegible]E+01	-.1[illegible]E-01
36	.9549E+00	.9579E+00	.1013E+01	-.1075E-01	.9[illegible]E+00	.9[illegible]E+00	.1[illegible]E+01	.2[illegible]E+01	-.2[illegible]E+01	-.3[illegible]E+01	-.2[illegible]E-01
37	.9520E+00	.9628E+00	.1012E+01	-.4115E-02	.9771E+00	.1[illegible]E+01	.1[illegible]E+01	.2[illegible]E+01	-.3[illegible]E+01	-.3[illegible]E+01	-.1[illegible]E-01
38	.9794E+00	.9736E+00	.1011E+01	-.9118E-02	.9[illegible]E+00	.1[illegible]E+01	.1[illegible]E+01	.2[illegible]E+01	-.2[illegible]E+01	-.2[illegible]E+01	-.8[illegible]E-02
39	.9997E+00	.9853E+00	.1007E+01	-.2[illegible]E-02	.9[illegible]E+00	.1[illegible]E+01	.1[illegible]E+01	.2[illegible]E+01	-.3[illegible]E+01	-.3[illegible]E+01	-.6[illegible]E-05
40	.1027E+01	.1029E+01	.9975E+00	.2[illegible]E-02	.1002E+01	.9[illegible]E+00	.9[illegible]E+00	.2[illegible]E+01	-.9[illegible]E+01	-.9[illegible]E+01	.8[illegible]E-02
41	.1065E+01	.1[illegible]E+01	.9871E+00	.1734E-01	.1066E+01	.9[illegible]E+00	.9[illegible]E+00	.2[illegible]E+01	-.1[illegible]E+01	-.1[illegible]E+01	.3[illegible]E-01
42	.1113E+01	.1143E+01	.9755E+00	.3[illegible]E-01	.1103E+01	.9[illegible]E+00	.9[illegible]E+00	.2[illegible]E+01	-.3[illegible]E+01	-.1[illegible]E+01	.3[illegible]E-01
43	.1164E+01	.1215E+01	.9593E+00	.6644E-01	.1146E+01	.9[illegible]E+00	.9[illegible]E+00	.2[illegible]E+01	.5[illegible]E+00	-.9[illegible]E+00	.5[illegible]E-01
44	.1208E+01	.1238E+01	.9987E+00	.8[illegible]E-01	.1[illegible]E+01	.9[illegible]E+00	.9[illegible]E+00	.2[illegible]E+01	.1[illegible]E+01	.5[illegible]E+00	.6[illegible]E-01
45	.1223E+01	.1229E+01	.9[illegible]E+00	.9[illegible]E-01	.1[illegible]E+01	.9[illegible]E+00	.9[illegible]E+00	.1[illegible]E+01	.1[illegible]E+01	.2[illegible]E+00	.7[illegible]E-01
46	.1228E+01	.1228E+01	.9900E+00	.9[illegible]E-01	.1[illegible]E+01	.9[illegible]E+00	.9[illegible]E+00	.1[illegible]E+01	.9[illegible]E+00	.1[illegible]E+00	.7[illegible]E-01

IST	JACCOBIAN	X	Y	DX1/DT	DX1/DX	DX1/DY	DETA/DX	DETA/DY	DI[illegible]/DY
1	.3[illegible]E+01	.1[illegible]E+01	.2[illegible]E+01	0.	-.[illegible]E+01	0.	.6[illegible]E-02	-.1[illegible]E+02	.1[illegible]E+01
2	.9[illegible]E+01	.1[illegible]E+02	.2[illegible]E+01	.9[illegible]E-01	-.[illegible]E+01	.[illegible]E-01	.2[illegible]E-05	.6[illegible]E-01	-.1[illegible]E+02	.1[illegible]E+01
3	.8[illegible]E+01	.1[illegible]E+02	.2[illegible]E+01	.3[illegible]E-01	-.[illegible]E+01	.[illegible]E-01	.[illegible]E-05	-.2[illegible]E+00	-.1[illegible]E+02	.1[illegible]E+01
4	.8[illegible]E+01	.1[illegible]E+02	.2[illegible]E+01	.2[illegible]E-01	-.[illegible]E+01	.[illegible]E+00	.[illegible]E-05	-.[illegible]E+00	-.1[illegible]E+02	.1[illegible]E+01
5	.1383E+02	.9[illegible]E+01	.2[illegible]E+01	.1[illegible]E-01	-.[illegible]E+01	.[illegible]E+00	.[illegible]E-05	.[illegible]E+00	-.1[illegible]E+02	.1[illegible]E+01
6	.2020E+02	.8[illegible]E+01	.2[illegible]E+01	.9[illegible]E-05	-.1[illegible]E+01	.[illegible]E+00	.[illegible]E-05	.1[illegible]E+01	-.1[illegible]E+02	.1[illegible]E+01
7	.3[illegible]E+02	.7[illegible]E+01	.2[illegible]E+01	.5[illegible]E-05	-.2[illegible]E+01	.[illegible]E+00	.[illegible]E-05	.3[illegible]E+01	-.1[illegible]E+02	.1[illegible]E+01
8	.4[illegible]E+02	.7[illegible]E+01	.2[illegible]E+01	.4[illegible]E-05	-.2[illegible]E+01	.[illegible]E+01	.[illegible]E-05	.6[illegible]E+01	-.1[illegible]E+02	.1[illegible]E+01
9	.5[illegible]E+02	.6[illegible]E+01	.1[illegible]E+01	.2[illegible]E-05	-.3[illegible]E+01	.[illegible]E+01	.[illegible]E-05	.8[illegible]E+01	-.2[illegible]E+02	.1[illegible]E+01
10	.6667E+02	.6[illegible]E+01	.1[illegible]E+01	.2[illegible]E-05	-.[illegible]E+01	.[illegible]E+01	.[illegible]E-05	.1[illegible]E+02	-.3[illegible]E+02	.1[illegible]E+01
11	.6[illegible]E+02	.5[illegible]E+01	.1[illegible]E+01	.2[illegible]E-05	-.[illegible]E+01	.[illegible]E+01	.[illegible]E-05	.1[illegible]E+02	-.3[illegible]E+02	.1[illegible]E+01
12	.5[illegible]E+02	.5[illegible]E+01	.1[illegible]E+01	.2[illegible]E-05	-.[illegible]E+01	.[illegible]E+01	.[illegible]E-05	.9[illegible]E+01	-.2[illegible]E+02	.1[illegible]E+01
13	.9921E+02	.9[illegible]E+01	.1[illegible]E+01	.2[illegible]E-05	-.9[illegible]E+01	.[illegible]E+01	.[illegible]E-05	.8[illegible]E+01	-.2[illegible]E+02	.1[illegible]E+01
14	.9[illegible]E+02	.9[illegible]E+01	.1[illegible]E+01	.1[illegible]E-05	-.9[illegible]E+01	.[illegible]E+01	.[illegible]E-05	.6[illegible]E+01	-.1[illegible]E+02	.1[illegible]E+01
15	.9[illegible]E+02	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E-05	-.9[illegible]E+01	.[illegible]E+01	.[illegible]E-05	.4[illegible]E+01	-.1[illegible]E+02	.1[illegible]E+01
16	.1[illegible]E+02	.1[illegible]E+01	.9[illegible]E+00	.5[illegible]E-05	-.9[illegible]E+01	.[illegible]E+01	.[illegible]E-05	.3[illegible]E+01	-.1[illegible]E+02	.1[illegible]E+01
17	.1[illegible]E+02	.1[illegible]E+01	.8[illegible]E+00	.5[illegible]E-05	-.9[illegible]E+01	.[illegible]E+01	.[illegible]E-05	.2[illegible]E+01	-.1[illegible]E+02	.1[illegible]E+01
18	.1[illegible]E+02	.2[illegible]E+01	.7[illegible]E+00	.4[illegible]E-05	-.9[illegible]E+01	.[illegible]E+01	.[illegible]E-05	.2[illegible]E+01	-.1[illegible]E+02	.1[illegible]E+01
19	.1[illegible]E+02	.2[illegible]E+01	.6[illegible]E+00	.3[illegible]E-05	-.9[illegible]E+01	.[illegible]E+01	.[illegible]E-05	.1[illegible]E+01	-.9[illegible]E+01	.1[illegible]E+01
20	.1[illegible]E+02	.2[illegible]E+01	.6[illegible]E+00	.1[illegible]E-05	-.9[illegible]E+01	.[illegible]E+01	.[illegible]E-05	.1[illegible]E+01	-.8[illegible]E+01	.1[illegible]E+01
21	.1[illegible]E+02	.2[illegible]E+01	.6[illegible]E+00	.1[illegible]E-05	-.[illegible]E+01	.[illegible]E+01	.[illegible]E-04	.8[illegible]E+01	-.7[illegible]E+01	.1[illegible]E+01
22	.9[illegible]E+02	.1[illegible]E+01	.6[illegible]E+00	.9[illegible]E-06	-.[illegible]E+01	.[illegible]E+01	.[illegible]E-04	.5[illegible]E+00	-.6[illegible]E+01	.1[illegible]E+01
23	.9[illegible]E+02	.1[illegible]E+01	.5[illegible]E+00	.8[illegible]E-07	-.8[illegible]E+01	.[illegible]E+01	.[illegible]E-04	.2[illegible]E+00	-.5[illegible]E+01	.1[illegible]E+01
24	.9[illegible]E+02	.1[illegible]E+01	.4[illegible]E+00	-.1[illegible]E-06	-.8[illegible]E+01	.[illegible]E+01	.[illegible]E-07	-.1[illegible]E+01	-.5[illegible]E+01	.1[illegible]E+01
25	.9[illegible]E+02	.1[illegible]E+01	.4[illegible]E+00	-.1[illegible]E-06	-.8[illegible]E+01	.[illegible]E+01	.[illegible]E-07	-.8[illegible]E-01	-.5[illegible]E+01	.1[illegible]E+01
26	.9[illegible]E+02	.1[illegible]E+01	.4[illegible]E+00	-.2[illegible]E-06	-.8[illegible]E+01	.[illegible]E+01	.[illegible]E-07	-.6[illegible]E-01	-.4[illegible]E+01	.1[illegible]E+01
27	.9[illegible]E+02	.1[illegible]E+01	.4[illegible]E+00	-.2[illegible]E-06	-.[illegible]E+01	.[illegible]E+01	.[illegible]E-01	-.4[illegible]E-01	-.4[illegible]E+01	.1[illegible]E+01
28	.9[illegible]E+02	.1[illegible]E+01	.4[illegible]E+00	-.2[illegible]E-06	-.1[illegible]E+02	.[illegible]E+01	.[illegible]E+01	-.1[illegible]E+01	-.2[illegible]E+01	.1[illegible]E+01
29	.5[illegible]E+02	.1[illegible]E+01	.7[illegible]E+00	-.2[illegible]E-06	-.1[illegible]E+02	.[illegible]E+01	.[illegible]E+01	-.5[illegible]E+01	-.5[illegible]E+00	.1[illegible]E+01
30	.9[illegible]E+02	.1[illegible]E+01	.8[illegible]E+00	-.2[illegible]E-06	-.1[illegible]E+02	.[illegible]E+01	.[illegible]E+01	.5[illegible]E+01	-.8[illegible]E+00	.1[illegible]E+01
31	.9[illegible]E+02	.1[illegible]E+01	.9[illegible]E+00	-.2[illegible]E-06	-.1[illegible]E+02	.[illegible]E+01	.[illegible]E+01	.6[illegible]E+01	-.7[illegible]E+00	.1[illegible]E+01
32	.3[illegible]E+02	.1[illegible]E+01	.1[illegible]E+01	-.2[illegible]E-06	-.1[illegible]E+02	.[illegible]E+01	.[illegible]E+01	.4[illegible]E+01	-.6[illegible]E+00	.1[illegible]E+01
33	.3[illegible]E+02	.1[illegible]E+01	.1[illegible]E+01	-.2[illegible]E-06	-.9[illegible]E+01	.[illegible]E+01	.[illegible]E+01	.[illegible]E+01	-.9[illegible]E+00	.1[illegible]E+01
34	.2[illegible]E+02	.1[illegible]E+01	.1[illegible]E+01	-.1[illegible]E-06	-.8[illegible]E+01	.[illegible]E+01	.[illegible]E+01	.[illegible]E+01	-.1[illegible]E+01	.1[illegible]E+01
35	.2[illegible]E+02	.1[illegible]E+01	.1[illegible]E+01	-.5[illegible]E-06	-.8[illegible]E+01	.[illegible]E+01	.[illegible]E+01	.[illegible]E+01	-.5[illegible]E+00	.9[illegible]E+00
36	.2[illegible]E+02	.1[illegible]E+01	.2[illegible]E+01	-.9[illegible]E-06	-.[illegible]E+01	.[illegible]E+01	.[illegible]E+01	.[illegible]E+01	-.2[illegible]E+00	.9[illegible]E+00
37	.1[illegible]E+02	.1[illegible]E+01	.[illegible]E+01	-.2[illegible]E-06	-.5[illegible]E+01	.[illegible]E+01	.[illegible]E+01	.[illegible]E+01	.3[illegible]E-01	.9[illegible]E+00
38	.1[illegible]E+02	.1[illegible]E+01	.1[illegible]E+01	-.9[illegible]E-06	-.[illegible]E+01	.[illegible]E+01	.[illegible]E+01	.[illegible]E+01	-.2[illegible]E+00	.1[illegible]E+01
39	.1[illegible]E+02	.1[illegible]E+01	.1[illegible]E+01	-.[illegible]E-06	-.[illegible]E+01	.[illegible]E+01	.[illegible]E+01	.[illegible]E+01	-.[illegible]E+00	.1[illegible]E+01
40	.8[illegible]E+01	.1[illegible]E+01	.9[illegible]E+01	.2[illegible]E-05	-.5[illegible]E+01	.[illegible]E+01	.[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01
41	.2[illegible]E+01	.1[illegible]E+01	.[illegible]E+01	.[illegible]E-04	.[illegible]E+01	.[illegible]E+01	.[illegible]E+01	.5[illegible]E+01	.7[illegible]E+00	.9[illegible]E+00
42	.2015E+01	.1[illegible]E+01	.8[illegible]E+01	.9[illegible]E-01	.[illegible]E+01	.[illegible]E+01	.[illegible]E+01	.5[illegible]E+01	.1[illegible]E+01	.9[illegible]E+00
43	.1[illegible]E+01	.1[illegible]E+01	.9[illegible]E+01	.9[illegible]E-01	.[illegible]E+01	.6[illegible]E+01	.5[illegible]E+01	.1[illegible]E+01	.3[illegible]E+01	.9[illegible]E+00

44	.3040E+01	.5596E+01	.9778+01	.1[illegible]E-04	.9[illegible]E+00	.2[illegible]E+00	.1[illegible]E-05	.3[illegible]E+00	.7[illegible]E+01	.9791E+00
45	.1816E+01	.8[illegible]E+01	.9[illegible]E+01	.2[illegible]E-05	.9[illegible]E+00	.[illegible]	.[illegible]	.5[illegible]E+00	.4[illegible]E+01	.1001E+01
46	.2140E+01	.1[illegible]E+01	.9[illegible]E+01	0.	.5[illegible]E+00	.[illegible]	[illegible]	[illegible]	.3[illegible]E+01	.1003E+01

SECOND INDEX= 17

IST	P/PINF	RHO/RHOINF	U/AINF	V/AINF	E/EINF	S/SINF	MI/MINF	MACH	UBOR/GINF	VBOR/GINF	CP
1	.2390E+01	.1[illegible]E+01	.8[illegible]E+00	-.1[illegible]E-01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.8[illegible]E+00	.1[illegible]E-01	.4[illegible]E+00
2	.2391E+01	.1[illegible]E+01	.8[illegible]E+00	-.1[illegible]E-01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.8[illegible]E+00	.1[illegible]E-01	.4[illegible]E+00
3	.2355E+01	.1[illegible]E+01	.8[illegible]E+00	-.1[illegible]E-01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.8[illegible]E+00	-.5[illegible]E-02	.4[illegible]E+00
4	.2310E+01	.1[illegible]E+01	.8[illegible]E+00	-.4[illegible]E-02	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.8[illegible]E+00	-.2[illegible]E-01	.4[illegible]E+00
5	.2285E+01	.1[illegible]E+01	.8[illegible]E+00	.2[illegible]E-01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.8[illegible]E+00	.1[illegible]E-01	.4[illegible]E+00
6	.2320E+01	.1[illegible]E+01	.8[illegible]E+00	.6[illegible]E-01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.8[illegible]E+00	.5[illegible]E-01	.4[illegible]E+00
7	.2351E+01	.1[illegible]E+01	.8[illegible]E+00	.1[illegible]E+00	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.8[illegible]E+00	.1[illegible]E-01	.4[illegible]E+00
8	.2396E+01	.1[illegible]E+01	.7[illegible]E+00	.1[illegible]E+00	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.9[illegible]E+00	.1[illegible]E+00	.4[illegible]E+00
9	.2498E+01	.1[illegible]E+01	.7[illegible]E+00	.2[illegible]E+00	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.9[illegible]E+00	.8[illegible]E-01	.4[illegible]E+00
10	.2640E+01	.1[illegible]E+01	.7[illegible]E+00	.2[illegible]E+00	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.9[illegible]E+00	.3[illegible]E-01	.3[illegible]E+00
11	.2728E+01	.2[illegible]E+01	.7[illegible]E+00	.2[illegible]E+00	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.7[illegible]E+00	.5[illegible]E-02	.3[illegible]E+00
12	.2931E+01	.2[illegible]E+01	.6[illegible]E+00	.2[illegible]E+00	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.9[illegible]E+00	-.9[illegible]E-01	.6[illegible]E+00
13	.3004E+01	.2[illegible]E+01	.7[illegible]E+00	.2[illegible]E+00	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.7[illegible]E+00	-.5[illegible]E-01	.6[illegible]E+00
14	.3001E+01	.2[illegible]E+01	.7[illegible]E+00	.2[illegible]E+00	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.7[illegible]E+00	-.2[illegible]E-01	.6[illegible]E+00
15	.2914E+01	.2[illegible]E+01	.6[illegible]E+00	.2[illegible]E+00	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.7[illegible]E+00	-.4[illegible]E-01	.6[illegible]E+00
16	.2787E+01	.2[illegible]E+01	.7[illegible]E+00	.2[illegible]E+00	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.6[illegible]E+00	-.7[illegible]E-01	.5[illegible]E+00
17	.2561E+01	.1[illegible]E+01	.7[illegible]E+00	.2[illegible]E+00	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.7[illegible]E+00	-.7[illegible]E-01	.5[illegible]E+00
18	.2398E+01	.1[illegible]E+01	.7[illegible]E+00	.1[illegible]E+00	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.7[illegible]E+00	-.9[illegible]E-01	.4[illegible]E+00
19	.2194E+01	.1[illegible]E+01	.8[illegible]E+00	.1[illegible]E+00	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.8[illegible]E+00	-.2[illegible]E-01	.3[illegible]E+00
20	.1942E+01	.1[illegible]E+01	.8[illegible]E+00	.1[illegible]E+00	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.8[illegible]E+00	-.4[illegible]E-01	.1[illegible]E+00
21	.1823E+01	.1[illegible]E+01	.8[illegible]E+00	.1[illegible]E+00	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.8[illegible]E+00	-.6[illegible]E-01	.2[illegible]E+00
22	.1790E+01	.1[illegible]E+01	.8[illegible]E+00	.1[illegible]E+00	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.8[illegible]E+00	-.1[illegible]E+00	.2[illegible]E+00
23	.1699E+01	.1[illegible]E+01	.8[illegible]E+00	.1[illegible]E+00	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.7[illegible]E+00	-.1[illegible]E+00	.2[illegible]E+00
24	.1699E+01	.1[illegible]E+01	.8[illegible]E+00	.1[illegible]E+00	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.7[illegible]E+00	-.1[illegible]E+00	.2[illegible]E+00
25	.1[illegible]E+01	.1[illegible]E+01	.8[illegible]E+00	.1[illegible]E+00	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.7[illegible]E+00	-.1[illegible]E+00	.2[illegible]E+00
26	.1[illegible]E+01	.1[illegible]E+01	.8[illegible]E+00	.1[illegible]E+00	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.8[illegible]E+00	-.1[illegible]E+00	.2[illegible]E+00
27	.1[illegible]E+01	.1[illegible]E+01	.8[illegible]E+00	.1[illegible]E+00	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.8[illegible]E+00	-.1[illegible]E+00	.2[illegible]E+00
28	.1[illegible]E+01	.1[illegible]E+01	.8[illegible]E+00	.1[illegible]E+00	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.8[illegible]E+00	-.1[illegible]E+00	.2[illegible]E+00
29	.1[illegible]E+01	.1[illegible]E+01	.8[illegible]E+00	.1[illegible]E+00	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.8[illegible]E+00	-.1[illegible]E+00	.2[illegible]E+00
30	.1[illegible]E+01	.1[illegible]E+01	.8[illegible]E+00	.1[illegible]E+00	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.8[illegible]E+00	-.1[illegible]E+00	.2[illegible]E+00
31	.1592E+01	.1[illegible]E+01	.9[illegible]E+00	.1[illegible]E+00	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.8[illegible]E+00	-.1[illegible]E+00	.1[illegible]E+00
32	.1429E+01	.1[illegible]E+01	.9[illegible]E+00	.1[illegible]E+00	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.9[illegible]E+00	-.2[illegible]E+00	.1[illegible]E+00
33	.1224E+01	.1[illegible]E+01	.9[illegible]E+00	.1[illegible]E+00	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.9[illegible]E+00	-.2[illegible]E+00	.7[illegible]E-01
34	.1067E+01	.1[illegible]E+01	.9[illegible]E+00	.1[illegible]E+00	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.9[illegible]E+00	-.2[illegible]E+00	.2[illegible]E-01
35	.9716E+00	.9[illegible]E+00	.1[illegible]E+01	-.8[illegible]E-02	.9[illegible]E+00	.9[illegible]E+00	.1[illegible]E+01	.9[illegible]E+00	-.2[illegible]E+00	-.2[illegible]E+00	-.9[illegible]E-02
36	.9560E+00	.9[illegible]E+00	.1[illegible]E+01	-.7[illegible]E-02	.9[illegible]E+00	.9[illegible]E+00	.1[illegible]E+01	.9[illegible]E+00	-.2[illegible]E+00	-.2[illegible]E+00	-.1[illegible]E-01
37	.9[illegible]E+00	.9[illegible]E+00	.1[illegible]E+01	-.[illegible]E-02	.9[illegible]E+00	.9[illegible]E+00	.1[illegible]E+01	.9[illegible]E+00	-.2[illegible]E+00	-.2[illegible]E+00	-.[illegible]E-02
38	.9[illegible]E+00	.9[illegible]E+00	.1[illegible]E+01	-.[illegible]E-03	.9[illegible]E+00	.9[illegible]E+00	.1[illegible]E+01	.9[illegible]E+00	-.2[illegible]E+00	-.2[illegible]E+00	-.[illegible]E-02
39	.1[illegible]E+01	.9[illegible]E+00	.1[illegible]E+01	-.1[illegible]E-02	.9[illegible]E+00	.9[illegible]E+00	.1[illegible]E+01	.9[illegible]E+00	-.2[illegible]E+00	-.2[illegible]E+00	.1[illegible]E-02
40	.1071E+01	.1[illegible]E+01	.9[illegible]E+00	.9[illegible]E-03	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.2[illegible]E+00	-.2[illegible]E+00	.4[illegible]E-02
41	.1095E+01	.1[illegible]E+01	.9[illegible]E+00	.1[illegible]E-01	.1[illegible]E+01	.9[illegible]E+00	.1[illegible]E+01	.1[illegible]E+01	-.2[illegible]E+00	-.2[illegible]E+00	.1[illegible]E-01
42	.1084E+01	.1[illegible]E+01	.9[illegible]E+00	.2[illegible]E-01	.1[illegible]E+01	.9[illegible]E+00	.1[illegible]E+01	.1[illegible]E+01	-.2[illegible]E+00	-.2[illegible]E+00	.2[illegible]E-01
43	.1089E+01	.1[illegible]E+01	.9[illegible]E+00	.4[illegible]E-01	.1[illegible]E+01	.9[illegible]E+00	.1[illegible]E+01	.1[illegible]E+01	-.2[illegible]E+00	-.2[illegible]E+00	.2[illegible]E-01
44	.1101E+01	.1[illegible]E+01	.9[illegible]E+00	.5[illegible]E-01	.1[illegible]E+01	.9[illegible]E+00	.1[illegible]E+01	.1[illegible]E+01	-.2[illegible]E+00	-.2[illegible]E+00	.3[illegible]E-01
45	.1104E+01	.1[illegible]E+01	.9[illegible]E+00	.5[illegible]E-01	.1[illegible]E+01	.9[illegible]E+00	.1[illegible]E+01	.1[illegible]E+01	-.2[illegible]E+00	.1[illegible]E+00	.3[illegible]E-01
46	.1104E+01	.1[illegible]E+01	.9[illegible]E+00	.5[illegible]E-01	.1[illegible]E+01	.9[illegible]E+00	.1[illegible]E+01	.1[illegible]E+01	-.2[illegible]E+00	.9[illegible]E+00	.3[illegible]E-01

IST	JACOBIAN	X	Y	DX1/DT	DX1/DX	DY1/DY	DETA/DT	DETA/DX	DETA/DY	EI/EIINF
1	.4[illegible]E+01	.1[illegible]E+00	.2[illegible]E+01	0.	-.2[illegible]E+00	.2[illegible]E+01	0.	.6[illegible]E-01	-.1[illegible]E+00	.1[illegible]E+01
2	.6[illegible]E+01	.1[illegible]E+02	.2[illegible]E+01	.[illegible]E-01	-.[illegible]E+00	.[illegible]E+01	-.1[illegible]E-05	.6[illegible]E-01	.1[illegible]E+00	.1[illegible]E+01
3	.7[illegible]E+01	.1[illegible]E+02	.2[illegible]E+01	.[illegible]E-01	-.1[illegible]E+00	.[illegible]E+02	.1[illegible]E-05	-.3[illegible]E-01	-.1[illegible]E+00	.1[illegible]E+01
4	.1074E+02	.1[illegible]E+02	.2[illegible]E+01	.1[illegible]E-01	-.4[illegible]E+00	.1[illegible]E+02	.1[illegible]E-05	-.6[illegible]E+00	-.1[illegible]E+00	.1[illegible]E+01
5	.1670E+02	.9[illegible]E+01	.2[illegible]E+01	.1[illegible]E-01	-.1[illegible]E+01	.1[illegible]E+02	.6[illegible]E-05	.7[illegible]E+00	-.1[illegible]E+00	.1[illegible]E+01
6	.2568E+02	.8[illegible]E+01	.2[illegible]E+01	.[illegible]E-01	-.1[illegible]E+01	.[illegible]E+02	.5[illegible]E-05	.2[illegible]E+01	-.1[illegible]E+00	.1[illegible]E+01
7	.3908E+02	.7[illegible]E+01	.2[illegible]E+01	.9[illegible]E-05	-.2[illegible]E+01	.1[illegible]E+02	.9[illegible]E-05	.3[illegible]E+01	-.1[illegible]E+00	.1[illegible]E+01
8	.5488E+02	.7[illegible]E+01	.2[illegible]E+01	.[illegible]E-05	-.[illegible]E+01	.[illegible]E+02	.[illegible]E-05	.[illegible]E+01	-.[illegible]E+00	.[illegible]E+01
9	.7588E+02	.6[illegible]E+01	.1[illegible]E+01	.2[illegible]E-05	-.1[illegible]E+01	.[illegible]E+01	.[illegible]E-05	.1[illegible]E+01	-.[illegible]E+00	.1[illegible]E+01
10	.9178E+02	.6[illegible]E+01	.1[illegible]E+01	.1[illegible]E-05	-.9[illegible]E+00	.8[illegible]E+01	.1[illegible]E-05	.1[illegible]E+00	-.9[illegible]E+00	.1[illegible]E+01
11	.8[illegible]E+02	.5[illegible]E+01	.1[illegible]E+01	.1[illegible]E-05	-.[illegible]E+00	.7[illegible]E+01	.1[illegible]E-05	.1[illegible]E+00	-.9[illegible]E+00	.1[illegible]E+01
12	.7[illegible]E+02	.5[illegible]E+01	.1[illegible]E+01	.1[illegible]E-05	-.9[illegible]E+00	.6[illegible]E+01	.1[illegible]E-05	.1[illegible]E+00	-.9[illegible]E+00	.1[illegible]E+01
13	.6[illegible]E+02	.4[illegible]E+01	.1[illegible]E+01	.2[illegible]E-05	-.9[illegible]E+00	.6[illegible]E+01	.1[illegible]E-05	.1[illegible]E+00	-.9[illegible]E+00	.1[illegible]E+01

14	.629E+02	.422E+01	.105E+01	.218E-05	-.455E+01	.641E+01	.7[illegible]E 04	.951E+01	-.278E+02	.138E+01	
15	.561E+02	.382E+01	.928E+00	.23[illegible] 05	-.[illegible]+01	.5[illegible]	.3[illegible] 04	.[illegible]+01	-.[illegible]	.[illegible]	
16	.546E+02	.394E+01	.813E+00	.2[illegible] 05	-.[illegible]+01	.5[illegible]	.7[illegible] 04	.[illegible]+01	-.190E+02	.[illegible]	
17	.591E+02	.312E+01	.792E+00	.2[illegible] 05	-.[illegible]+01	.5[illegible]	.[illegible] 04	.[illegible]+01	-.[illegible]	.[illegible]	
18	.505E+02	.2[illegible]+01	.[illegible]+00	.[illegible] 05	-.[illegible]+01	.5[illegible]	.[illegible] 05	.981E+01	-.[illegible]	.[illegible]	
19	.468E+02	.25[illegible]	.[illegible]+00	.[illegible] 05	-.[illegible]+01	.5[illegible]	.[illegible] 05	.[illegible]+01	-.[illegible]	.[illegible]	
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23	.815E+02	.171E+01	.995E+00	-.[illegible] 06	-.[illegible]+01	.[illegible]	.[illegible] 07	.[illegible]	-.[illegible]	.[illegible]	
24	.781E+02	.160E+01	.[illegible]+00	-.[illegible] 06	-.[illegible]+01	.[illegible]	.[illegible] 07	.[illegible]+00	-.[illegible]	.[illegible]	
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46	.299E+01	.104E+02	.[illegible]+01	0.	.[illegible]+00	.[illegible]	13 0.	.[illegible]+00	.[illegible]+01	.[illegible]	

SECOND INDEX= 18

IST	P/P1N	RHO/RHO1N	U/U1N	V/U1N	T/T1N	S/S1N	HT/HT1N	MACH	UBAR/Q1N	VBAR/Q1N	CP
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2	.239E+01	.185E+01	.[illegible]+00	-.[illegible] 01	.[illegible]+01	.[illegible]+01	.[illegible]+01	.[illegible]+01	-.[illegible]+00	.[illegible] 01	.455E+00
3	.237E+01	.184E+01	.[illegible]+00	-.[illegible] 01	.[illegible]+01	.[illegible]+01	.[illegible]+01	.[illegible]+01	-.[illegible]+00	-.[illegible] 02	.454E+00
4	.227E+01	.177E+01	.[illegible]+00	-.[illegible] 01	.[illegible]+01	.[illegible]+01	.[illegible]+01	.[illegible]+01	-.[illegible]+00	-.[illegible] 01	.418E+00
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6	.230E+01	.179E+01	.[illegible]+00	-.[illegible] 01	.[illegible]+01	.[illegible]+01	.[illegible]+01	.[illegible]+01	-.[illegible]+00	-.[illegible] 01	.419E+00
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27	.226E+01	.176E+01	.[illegible]+00	.[illegible] 01	.[illegible]+01	.[illegible]+01	.[illegible]+01	.[illegible]+01	-.[illegible]+00	.[illegible] 01	.414E+00
28	.229E+01	.179E+01	.[illegible]+00	.[illegible] 01	.[illegible]+01	.[illegible]+01	.[illegible]+01	.[illegible]+01	-.[illegible]+00	.[illegible] 01	.422E+00
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31	.227E+01	.176E+01	.[illegible]+00	.[illegible] 01	.[illegible]+01	.[illegible]+01	.[illegible]+01	.[illegible]+01	-.[illegible]+00	.[illegible] 01	.416E+00

32	.1570E+01	.1362E+01	.9[illegible]E+00	.1[illegible]E+00	.1151E+01	.1[illegible]E+01	.1[illegible]E+01	.1777E+01	-.1[illegible]E+01	-.21[illegible]E+01	.1[illegible]E+00
33	.1541E+01	.1214E+01	.9[illegible]E+00	.7[illegible]E 01	.1151E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.2[illegible]E+01	-.2[illegible]E+01	.1111E+00
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36	.9843E+00	.9856E+00	.1[illegible]E+01	-.7[illegible]E 00	.9[illegible]E+00	.9[illegible]E+00	.1[illegible]E+01	.3[illegible]E+01	-.4[illegible]E+01	-.4[illegible]E+01	-.1[illegible]E-01
37	.9858E+00	.9934E+00	.1[illegible]E+01	-.[illegible]E 00	.9[illegible]E+00	.9[illegible]E+00	.1[illegible]E+01	.2[illegible]E+01	-.4[illegible]E+01	-.4[illegible]E+01	-.4[illegible]E-02
38	.9973E+00	.9991E+00	.1[illegible]E+01	.5[illegible]E 00	.9[illegible]E+00	.9[illegible]E+00	.9[illegible]E+00	.2[illegible]E+01	-.4[illegible]E+01	-.4[illegible]E+01	-.7[illegible]E-03
39	.1006E+01	.9993E+00	.9[illegible]E+00	-.1[illegible]E 00	.9[illegible]E+00	.1[illegible]E+01	.1[illegible]E+01	.2[illegible]E+01	-.5[illegible]E+01	-.5[illegible]E+01	.1[illegible]E-02
40	.1021E+01	.9919E+00	.9[illegible]E+00	-.1[illegible]E 00	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.2[illegible]E+01	-.6[illegible]E+01	-.6[illegible]E+01	.6[illegible]E-02
41	.1041E+01	.2[illegible]E+01	.9[illegible]E+00	.8[illegible]E 00	.1[illegible]E+01	.9[illegible]E+00	.9[illegible]E+00	.2[illegible]E+01	-.1[illegible]E+01	-.2[illegible]E+01	.1[illegible]E-01
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44	.1026E+01	.1[illegible]E+01	.9[illegible]E+00	.3[illegible]E 01	.1[illegible]E+01	.6[illegible]E+00	.8[illegible]E+00	.2[illegible]E+01	.1[illegible]E+01	.1[illegible]E+00	.9[illegible]E-02
45	.1015E+01	.1[illegible]E+01	.9[illegible]E+00	.3[illegible]E 01	.1[illegible]E+01	.6[illegible]E+00	.8[illegible]E+00	.2[illegible]E+01	.1[illegible]E+01	.8[illegible]E-01	.5[illegible]E-02
46	.1015E+01	.1[illegible]E+01	.9[illegible]E+00	.3[illegible]E 01	.1[illegible]E+01	.6[illegible]E+00	.8[illegible]E+00	.2[illegible]E+01	.9[illegible]E+00	.5[illegible]E-01	.3[illegible]E-02

151	ORDINATE	X	Y	DX1/DT	DX1/DX	DY1/DY	DETA/DX	DETA/DY	ETA[illegible]
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2	.7[illegible]E+01	.1[illegible]E+02	.2[illegible]E+01	.2[illegible]E 01	-.[illegible]E+00	.3[illegible]E 01	-.2[illegible]E-05	.6[illegible]E-01	-.1[illegible]E+02	.1501E+01
3	.9[illegible]E+01	.1[illegible]E+02	.2[illegible]E+01	.1[illegible] 01	-.1[illegible]E+00	.8[illegible] 02	.[illegible]E 05	-.[illegible]E+00	-.1[illegible]E+02	.1[illegible]E+01
4	.1[illegible]E+02	.1[illegible]E+02	.2[illegible]E+01	.1[illegible] 01	-.[illegible]E+00	.1[illegible]E+00	.[illegible]E 05	-.[illegible]E+00	-.2[illegible]E+02	.1[illegible]E+01
5	.2[illegible]E+02	.[illegible]E+01	.2[illegible]E+01	.[illegible] 00	-.1[illegible]E+01	.1[illegible]E+00	.[illegible] 05	.[illegible]E+00	-.2[illegible]E+02	.1[illegible]E+01
6	.3[illegible]E+02	.[illegible]E+01	.2[illegible]E+01	.[illegible] 00	-.1[illegible]E+01	.[illegible]E+00	.[illegible] 05	.[illegible]E+00	-.2[illegible]E+02	.1[illegible]E+01
7	.[illegible]E+02	.[illegible]E+01	.2[illegible]E+01	.[illegible] 00	-.[illegible]E+01	.1[illegible]E+01	.[illegible] 05	.[illegible]E+01	-.2[illegible]E+02	.1[illegible]E+01
8	.7[illegible]E+02	.7[illegible]E+01	.1[illegible]E+01	.[illegible] 00	-.[illegible]E+01	.[illegible]E+01	.[illegible] 05	.[illegible]E+01	-.3[illegible]E+02	.1[illegible]E+01
9	.1[illegible]E+03	.[illegible]E+02	.1[illegible]E+01	.1[illegible] 00	-.3[illegible]E+01	.[illegible]E+01	.1[illegible] 05	.1[illegible]E+02	-.[illegible]E+02	.1[illegible]E+01
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11	.1[illegible]E+03	.[illegible]E+02	.1[illegible]E+01	.1[illegible] 00	-.[illegible]E+01	.[illegible]E+01	.1[illegible] 05	.2[illegible]E+02	-.[illegible]E+02	.1[illegible]E+01
12	.1[illegible]E+03	.5[illegible]E+02	.1[illegible]E+01	.1[illegible] 00	-.[illegible]E+01	.[illegible]E+01	.[illegible] 06	.1[illegible]E+02	-.[illegible]E+02	.1[illegible]E+01
13	.[illegible]E+03	.[illegible]E+02	.1[illegible]E+01	.1[illegible] 00	-.[illegible]E+01	.[illegible]E+01	.[illegible] 06	.1[illegible]E+02	-.[illegible]E+02	.1[illegible]E+01
14	.[illegible]E+02	.[illegible]E+02	.[illegible]E+01	.1[illegible] 00	-.[illegible]E+01	.[illegible]E+01	.[illegible] 06	.1[illegible]	-.[illegible]E+02	.1[illegible]E+01
15	.[illegible]E+02	.[illegible]E+01	.[illegible]E+00	.1[illegible] 00	-.[illegible]E+01	.[illegible]E+01	.[illegible] 06	.[illegible]	-.[illegible]E+02	.1[illegible]E+01
16	.[illegible]E+02	.[illegible]E+01	.[illegible]E+00	.1[illegible] 00	-.[illegible]E+01	.[illegible]E+01	.[illegible] 06	.[illegible]E+01	-.[illegible]E+02	.1[illegible]E+01
17	.[illegible]E+02	.[illegible]E+01	.[illegible]E+00	.1[illegible] 00	-.[illegible]E+01	.[illegible]E+01	.[illegible] 06	.[illegible]E+01	-.[illegible]E+02	.1[illegible]E+01
18	.[illegible]E+02	.[illegible]E+01	.[illegible]E+00	.1[illegible] 00	-.[illegible]E+01	.[illegible]E+01	.[illegible] 06	.[illegible]E+01	-.[illegible]E+02	.1[illegible]E+01
19	.[illegible]E+02	.[illegible]E+01	.[illegible]E+00	.[illegible] 00	-.[illegible]E+01	.[illegible]E+01	.[illegible] 06	.[illegible]E+01	-.[illegible]E+02	.1[illegible]E+01
20	.[illegible]E+02	.[illegible]E+01	.[illegible]E+00	.[illegible] 00	-.[illegible]E+01	.[illegible]E+01	.[illegible] 06	.[illegible]E+01	-.[illegible]E+02	.1[illegible]E+01
21	.[illegible]E+02	.[illegible]E+01	.[illegible]E+00	.1[illegible] 00	-.[illegible]E+01	.[illegible]E+01	.[illegible] 06	.[illegible]E+01	-.[illegible]E+02	.1[illegible]E+01
22	.1[illegible]E+03	.1[illegible]E+01	.[illegible]E+00	-.[illegible] 00	-.[illegible]E+01	.[illegible]E+01	.[illegible] 07	.[illegible]E+01	-.[illegible]E+02	.1[illegible]E+01
23	.1[illegible]E+03	.1[illegible]E+01	.[illegible]E+00	-.1[illegible] 00	-.1[illegible]E+01	.[illegible]E+01	.[illegible] 07	.1[illegible]E+01	-.1[illegible]E+02	.1[illegible]E+01
24	.1[illegible]E+03	.1[illegible]E+01	.[illegible]E+00	-.1[illegible] 00	-.1[illegible]E+01	.[illegible]E+01	.[illegible] 07	.1[illegible]E+01	-.1[illegible]E+02	.1[illegible]E+01
25	.1[illegible]E+03	.1[illegible]E+01	.[illegible]E+00	-.1[illegible] 00	-.1[illegible]E+01	.[illegible]E+01	.[illegible] 07	.1[illegible]E+01	-.1[illegible]E+02	.1[illegible]E+01
26	.1[illegible]E+03	.1[illegible]E+01	.[illegible]E+00	-.9[illegible] 00	-.1[illegible]E+01	.[illegible]E+01	.[illegible] 07	.1[illegible]E+01	-.1[illegible]E+02	.1[illegible]E+01
27	.1[illegible]E+03	.1[illegible]E+01	.[illegible]E+00	-.8[illegible] 00	-.1[illegible]E+01	.[illegible]E+01	.[illegible] 07	.1[illegible]E+01	-.1[illegible]E+02	.1[illegible]E+01
28	.1[illegible]E+03	.1[illegible]E+01	.[illegible]E+00	-.7[illegible] 00	-.1[illegible]E+01	.[illegible]E+01	.[illegible] 07	.[illegible]E+01	-.[illegible]E+01	.1[illegible]E+01
29	.1[illegible]E+03	.1[illegible]E+01	.[illegible]E+00	-.1[illegible] 00	-.1[illegible]E+01	.[illegible]E+01	.[illegible] 07	.1[illegible]E+02	-.1[illegible]E+01	.1[illegible]E+01
30	.1[illegible]E+03	.1[illegible]E+01	.[illegible]E+00	-.[illegible] 00	-.1[illegible]E+01	.[illegible]E+01	.[illegible] 08	.1[illegible]E+02	-.1[illegible]E+01	.1[illegible]E+01
31	.1[illegible]E+03	.1[illegible]E+01	.[illegible]E+00	.2[illegible] 00	-.1[illegible]E+01	.[illegible]E+01	.[illegible] 08	.1[illegible]E+02	-.1[illegible]E+01	.1[illegible]E+01
32	.1[illegible]E+03	.1[illegible]E+01	.[illegible]E+00	.[illegible] 00	-.1[illegible]E+01	.[illegible]E+01	.[illegible] 08	.1[illegible]E+02	-.[illegible]E+00	.1[illegible]E+01
33	.1[illegible]E+03	.1[illegible]E+01	.[illegible]E+00	.1[illegible] 00	-.1[illegible]E+01	.[illegible]E+01	.1[illegible] 07	.[illegible]E+02	-.[illegible]E+00	.1[illegible]E+01
34	.[illegible]E+03	.1[illegible]E+01	.1[illegible]E+01	.[illegible] 00	-.1[illegible]E+01	.[illegible]E+01	.[illegible] 07	.[illegible]E+02	-.[illegible]E+00	.[illegible]E+01
35	.[illegible]E+02	.1[illegible]E+01	.1[illegible]E+01	.[illegible] 00	-.1[illegible]E+01	.[illegible]E+01	.[illegible] 07	.[illegible]E+02	-.[illegible]E+00	.[illegible]E+01
36	.[illegible]E+02	.1[illegible]E+01	.1[illegible]E+01	.[illegible] 00	-.1[illegible]E+01	.[illegible]E+01	.[illegible] 07	.[illegible]E+02	-.[illegible]E+00	.[illegible]E+01
37	.[illegible]E+02	.1[illegible]E+01	.[illegible]E+01	.[illegible] 00	-.[illegible]E+01	.[illegible]E+01	.[illegible] 07	.[illegible]E+02	-.[illegible]E+00	.[illegible]E+01
38	.[illegible]E+02	.1[illegible]E+01	.[illegible]E+01	.[illegible] 00	-.[illegible]E+01	.[illegible]E+01	.[illegible] 07	.[illegible]E+02	-.[illegible]E+00	.[illegible]E+01
39	.[illegible]E+02	.1[illegible]E+01	.[illegible]E+01	-.[illegible] 00	-.[illegible]E+01	.[illegible]E+01	.[illegible] 07	.[illegible]E+02	-.[illegible]E+00	.1[illegible]E+01
40	.[illegible]E+02	.1[illegible]E+01	.[illegible]E+01	-.[illegible] 00	-.[illegible]E+01	.[illegible]E+01	.[illegible] 07	.[illegible]E+01	.[illegible]E+01	.1[illegible]E+01
41	.[illegible]E+01	.1[illegible]E+01	.[illegible]E+01	.[illegible] 00	-.[illegible]E+01	.[illegible]E+01	.[illegible] 07	.[illegible]	.[illegible]E+00	.1[illegible]E+01
42	.[illegible]E+01	.[illegible]E+01	.[illegible]E+01	.[illegible] 00	.[illegible]E+01	.[illegible]E+01	.[illegible] 07	.[illegible]E+01	.[illegible]E+01	.[illegible]E+01
43	.[illegible]E+01	.2[illegible]E+01	.[illegible]E+01	.[illegible] 00	.[illegible]E+01	.[illegible]E+01	.[illegible] 07	.[illegible]E+01	.[illegible]E+01	.[illegible]E+01
44	.[illegible]E+01	.[illegible]E+01	.[illegible]E+01	.[illegible] 00	.[illegible]E+01	.[illegible]E+01	.[illegible] 07	.[illegible]E+01	.[illegible]E+01	.[illegible]E+01
45	.[illegible]E+01	.[illegible]E+01	.[illegible]E+01	.[illegible] 00	.[illegible]E+01	.[illegible]E+01	.[illegible] 07	.[illegible]E+01	.[illegible]E+01	.[illegible]E+01
46	.[illegible]E+01	.1[illegible]E+02	.[illegible]E+01	0.	.[illegible]E+01	.[illegible]E+01	.[illegible] 07	.[illegible]E+00	.[illegible]E+01	.[illegible]E+01

SECOND ITERATION = 19

151	P/[illegible]	RHO/RHO[illegible]	U/[illegible]	V/[illegible]	E[illegible]	S[illegible]	MACH NO.	PSI/H	[illegible]	VORTICITY	CP
1	.2900E+01	.1[illegible]E+01	.[illegible]E+00	-.1[illegible] 01	.1[illegible]E+01	.1[illegible]E+00	.1[illegible]E+01	.1[illegible]E+01	-.[illegible]E+00	.1[illegible]E-01	.4578E+00

2	.2400E+01	.1841E+01	.8956E+00	-.1154E-01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.8464E+00	.1161E-01	.4579E+00
3	.2316E+01	.1775E+01	.8[illegible]E+00	-.1[illegible]E-01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.8[illegible]E+00	-.4[illegible]E-02	.4[illegible]E+00
4	.2227E+01	.1747E+01	.8[illegible]E+00	-.1[illegible]E-01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.8[illegible]E+00	-.2[illegible]E-01	.4[illegible]E+00
5	.2210E+01	.1736E+01	.8[illegible]E+00	.2176E-01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.8[illegible]E+00	.1177E-01	.3995E+00
6	.2294E+01	.1747E+01	.8554E+00	.7[illegible]E-01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.8[illegible]E+00	.1[illegible]E-01	.4078E+00
7	.2304E+01	.1785E+01	.8[illegible]E+00	.1516E+00	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.8[illegible]E+00	.2[illegible]E-01	.4[illegible]E+00
8	.2378E+01	.1851E+01	.8[illegible]E+00	.1[illegible]E+00	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.8[illegible]E+00	.6[illegible]E-01	.4[illegible]E+00
9	.2491E+01	.1[illegible]E+01	.7[illegible]E+00	.2[illegible]E+00	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.8[illegible]E+00	.2[illegible]E-01	.4[illegible]E+00
10	.2641E+01	.1[illegible]E+01	.7[illegible]E+00	.2[illegible]E+00	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.8[illegible]E+00	.1[illegible]E-01	.5[illegible]E+00
11	.2857E+01	.2[illegible]E+01	.7[illegible]E+00	.2[illegible]E+00	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.7[illegible]E+00	.1[illegible]E-01	.6[illegible]E+00
12	.2959E+01	.2149E+01	.7[illegible]E+00	.2[illegible]E+00	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.7[illegible]E+00	-.2[illegible]E-01	.6[illegible]E+00
13	.3013E+01	.2137E+01	.7151E+00	.2[illegible]E+00	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.7[illegible]E+00	-.1[illegible]E-01	.6[illegible]E+00
14	.2999E+01	.2106E+01	.7[illegible]E+00	.2[illegible]E+00	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.7[illegible]E+00	-.8[illegible]E-02	.6553E+00
15	.2892E+01	.2111E+01	.7[illegible]E+00	.2586E+00	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.7[illegible]E+00	-.1[illegible]E-01	.6[illegible]E+00
16	.2731E+01	.2019E+01	.7[illegible]E+00	.2[illegible]E+00	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.7[illegible]E+00	-.2[illegible]E-01	.5591E+00
17	.2499E+01	.1904E+01	.7718E+00	.2[illegible]E+00	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.7[illegible]E+00	-.2[illegible]E-01	.4888E+00
18	.2270E+01	.1785E+01	.8[illegible]E+00	.1908E+00	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.8[illegible]E+00	-.4[illegible]E-02	.4[illegible]E+00
19	.2077E+01	.1675E+01	.8[illegible]E+00	.1[illegible]E+00	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.8[illegible]E+00	-.6[illegible]E-02	.3[illegible]E+00
20	.1909E+01	.1[illegible]E+01	.8[illegible]E+00	.1[illegible]E+00	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.8[illegible]E+00	-.1[illegible]E-01	.2[illegible]E+00
21	.1785E+01	.1511E+01	.8[illegible]E+00	.1[illegible]E+00	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.8[illegible]E+00	-.1[illegible]E-01	.2[illegible]E+00
22	.1700E+01	.1[illegible]E+01	.8[illegible]E+00	.1[illegible]E+00	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.8[illegible]E+00	-.3[illegible]E-01	.2[illegible]E+00
23	.1701E+01	.1[illegible]E+01	.8[illegible]E+00	.1[illegible]E+00	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.8[illegible]E+00	-.4[illegible]E-01	.2[illegible]E+00
24	.1708E+01	.1[illegible]E+01	.8[illegible]E+00	.1[illegible]E+00	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.8[illegible]E+00	-.5[illegible]E-01	.2[illegible]E+00
25	.1727E+01	.1[illegible]E+01	.8[illegible]E+00	.1[illegible]E+00	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.8[illegible]E+00	-.4[illegible]E-01	.2[illegible]E+00
26	.1747E+01	.1[illegible]E+01	.8[illegible]E+00	.1[illegible]E+00	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.8[illegible]E+00	-.3[illegible]E-01	.2[illegible]E+00
27	.1764E+01	.1[illegible]E+01	.8[illegible]E+00	.1[illegible]E+00	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.8[illegible]E+00	-.3[illegible]E-01	.2[illegible]E+00
28	.1780E+01	.1[illegible]E+01	.8[illegible]E+00	.1[illegible]E+00	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.8[illegible]E+00	-.2[illegible]E+00	.2[illegible]E+00
29	.1801E+01	.1[illegible]E+01	.8[illegible]E+00	.1[illegible]E+00	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.8[illegible]E+00	-.1[illegible]E-01	.2[illegible]E+00
30	.1811E+01	.1[illegible]E+01	.8[illegible]E+00	.1[illegible]E+00	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.8[illegible]E+00	-.1[illegible]E+00	.2[illegible]E+00
31	.1780E+01	.1[illegible]E+01	.8[illegible]E+00	.1[illegible]E+00	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.8[illegible]E+00	-.2[illegible]E+00	.2[illegible]E+00
32	.1867E+01	.1[illegible]E+01	.8[illegible]E+00	.1[illegible]E+00	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.8[illegible]E+00	-.2[illegible]E+00	.2[illegible]E+00
33	.1943E+01	.1[illegible]E+01	.9[illegible]E+00	.5[illegible]E-01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.8[illegible]E+00	-.2[illegible]E+00	.2[illegible]E+00
34	.1115E+01	.1[illegible]E+01	.9[illegible]E+00	.2[illegible]E-01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.8[illegible]E+00	-.3[illegible]E+00	.9[illegible]E-01
35	.9785E+00	.9[illegible]E+00	.1[illegible]E+01	-.1[illegible]E-01	.9[illegible]E+00	.9[illegible]E+00	.9[illegible]E+00	.9[illegible]E+00	-.8[illegible]E+00	-.3[illegible]E+00	-.7[illegible]E-02
36	.9734E+00	.9[illegible]E+00	.1[illegible]E+01	-.5[illegible]E-02	.9[illegible]E+00	.9[illegible]E+00	.9[illegible]E+00	.1[illegible]E+01	-.8[illegible]E+00	-.3[illegible]E+00	-.8[illegible]E-02
37	.9949E+00	.9971E+00	.1[illegible]E+01	.1[illegible]E-01	.9[illegible]E+00	.9[illegible]E+00	.9[illegible]E+00	.1[illegible]E+01	-.8[illegible]E+00	-.3[illegible]E+00	-.1[illegible]E-02
38	.9988E+00	.1[illegible]E+01	.9999E+00	.4[illegible]E-03	.1[illegible]E+01	.9[illegible]E+00	.9[illegible]E+00	.2[illegible]E+01	-.8[illegible]E+00	-.3[illegible]E+00	-.4[illegible]E-03
39	.9987E+00	.1008E+01	.1[illegible]E+01	-.5[illegible]E-03	.9[illegible]E+00	.9[illegible]E+00	.9[illegible]E+00	.2[illegible]E+01	-.8[illegible]E+00	-.3[illegible]E+00	-.4[illegible]E-03
40	.1018E+01	.9[illegible]E+00	.9[illegible]E+00	-.2[illegible]E-02	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.2[illegible]E+01	-.8[illegible]E+00	-.3[illegible]E+00	.5[illegible]E-03
41	.1045E+01	.1[illegible]E+01	.9[illegible]E+00	.9[illegible]E-03	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.2[illegible]E+01	-.8[illegible]E+00	-.2[illegible]E+00	.2[illegible]E-04
42	.1057E+01	.1[illegible]E+01	.5[illegible]E+00	.1[illegible]E-01	.1[illegible]E+01	.8[illegible]E+00	.8[illegible]E+00	.2[illegible]E+01	-.5[illegible]E+00	-.1[illegible]E+00	.3[illegible]E-01
43	.1060E+01	.1[illegible]E+01	.5[illegible]E+00	.9[illegible]E-01	.1[illegible]E+01	.6[illegible]E+00	.6[illegible]E+00	.2[illegible]E+01	.5[illegible]E+00	-.2[illegible]E-01	.2[illegible]E-01
44	.1041E+01	.1[illegible]E+01	.9[illegible]E+00	.9[illegible]E-01	.1[illegible]E+01	.3[illegible]E+00	.3[illegible]E+00	.2[illegible]E+01	.1[illegible]E+01	.1[illegible]E+00	.1[illegible]E-01
45	.1042E+01	.1[illegible]E+01	.9[illegible]E+00	.5[illegible]E-01	.1[illegible]E+01	.9[illegible]E+00	.9[illegible]E+00	.2[illegible]E+01	.1[illegible]E+01	.9[illegible]E-01	.1[illegible]E-01
46	.1042E+01	.1[illegible]E+01	.9[illegible]E+00	.5[illegible]E-01	.1[illegible]E+01	.9[illegible]E+00	.9[illegible]E+00	.2[illegible]E+01	.9[illegible]E+00	.6[illegible]E-01	.1[illegible]E-01

157	JACOBIAN	X	Y	DX1/DT	DY1/DT	DX2/DT	DY2/DT	DETA/DX	DETA/DY	ETA
1	.3042E+01	.1[illegible]E+01	.2[illegible]E+01	0.	-.6[illegible]E+01	.8[illegible]E+02	.[illegible]	.6[illegible]E+02	-.2[illegible]E+02	.1[illegible]E+01
2	.9858E+01	.1[illegible]E+02	.2[illegible]E+01	.1[illegible]E+01	-.[illegible]E+01	.9[illegible]E+01	.5[illegible]E+01	.5[illegible]E+02	-.2[illegible]E+02	.1[illegible]E+01
3	.1215E+02	.1[illegible]E+02	.2[illegible]E+01	.1[illegible]E+01	-.[illegible]E+01	.8[illegible]E+01	.9[illegible]E+01	.4[illegible]E+02	-.2[illegible]E+02	.1[illegible]E+01
4	.1372E+02	.1[illegible]E+02	.2[illegible]E+01	.1[illegible]E+01	-.[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.3[illegible]E+02	-.1[illegible]E+02	.1[illegible]E+01
5	.1421E+02	.1[illegible]E+02	.2[illegible]E+01	.6[illegible]E+00	-.[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.3[illegible]E+02	-.1[illegible]E+02	.1[illegible]E+01
6	.1444E+02	.1[illegible]E+02	.2[illegible]E+01	.3[illegible]E+00	-.[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.3[illegible]E+02	-.1[illegible]E+02	.1[illegible]E+01
7	.1460E+02	.1[illegible]E+02	.2[illegible]E+01	.1[illegible]E+00	-.[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.3[illegible]E+02	-.1[illegible]E+02	.1[illegible]E+01
8	.1469E+02	.1[illegible]E+02	.2[illegible]E+01	.1[illegible]E+00	-.[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.3[illegible]E+02	-.1[illegible]E+02	.1[illegible]E+01
9	.1472E+02	.1[illegible]E+02	.2[illegible]E+01	.1[illegible]E+00	-.[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.3[illegible]E+02	-.1[illegible]E+02	.1[illegible]E+01
10	.1475E+02	.1[illegible]E+02	.2[illegible]E+01	.1[illegible]E+00	-.[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.3[illegible]E+02	-.1[illegible]E+02	.1[illegible]E+01
11	.1477E+02	.1[illegible]E+02	.2[illegible]E+01	.1[illegible]E+00	-.[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.3[illegible]E+02	-.1[illegible]E+02	.1[illegible]E+01
12	.1478E+02	.1[illegible]E+02	.2[illegible]E+01	.1[illegible]E+00	-.[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.3[illegible]E+02	-.1[illegible]E+02	.1[illegible]E+01
13	.1479E+02	.1[illegible]E+02	.2[illegible]E+01	.1[illegible]E+00	-.[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.3[illegible]E+02	-.1[illegible]E+02	.1[illegible]E+01
14	.1480E+02	.1[illegible]E+02	.2[illegible]E+01	.1[illegible]E+00	-.[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.3[illegible]E+02	-.1[illegible]E+02	.1[illegible]E+01
15	.1481E+02	.1[illegible]E+02	.2[illegible]E+01	.1[illegible]E+00	-.[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.3[illegible]E+02	-.1[illegible]E+02	.1[illegible]E+01
16	.1482E+02	.1[illegible]E+02	.2[illegible]E+01	.1[illegible]E+00	-.[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.3[illegible]E+02	-.1[illegible]E+02	.1[illegible]E+01
17	.1483E+02	.1[illegible]E+02	.2[illegible]E+01	.1[illegible]E+00	-.[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.3[illegible]E+02	-.1[illegible]E+02	.1[illegible]E+01
18	.1484E+02	.1[illegible]E+02	.2[illegible]E+01	.1[illegible]E+00	-.[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.3[illegible]E+02	-.1[illegible]E+02	.1[illegible]E+01
19	.1485E+02	.1[illegible]E+02	.2[illegible]E+01	.1[illegible]E+00	-.[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.3[illegible]E+02	-.1[illegible]E+02	.1[illegible]E+01
20	.1485E+02	.1[illegible]E+02	.2[illegible]E+01	.1[illegible]E+00	-.[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.3[illegible]E+02	-.1[illegible]E+02	.1[illegible]E+01

21	.1388E+03	.1876E+01	.3804E+00	.9572E-07	-.6194E+01	.4704E+01	.1671E-06	.9904E+01	-.2797E+02	.1163E+01		
22	.1707E+03	.1675E+01	.3554E+00	-.5[illegible]E-07	-.7[illegible]E+01	.[illegible]	.[illegible]	.[illegible]	-.[illegible]	.[illegible]		
23	.2228E+03	.1578E+01	.3[illegible]	-.[illegible]	-.[illegible]	.[illegible]	.[illegible]	.[illegible]	-.[illegible]	.[illegible]		
24	.2112E+03	.1[illegible]	.[illegible]	-.[illegible]	-.[illegible]	.[illegible]	-.[illegible]	.[illegible]	-.[illegible]	.[illegible]		
25	.2003E+03	.1[illegible]	.[illegible]	-.[illegible]	-.[illegible]	.[illegible]	.[illegible]	.[illegible]	-.[illegible]	.[illegible]		
26	.1914E+03	.1[illegible]	.[illegible]	-.[illegible]	-.[illegible]	.[illegible]	.[illegible]	.[illegible]	-.[illegible]	.[illegible]		
27	.1835E+03	.1[illegible]	.[illegible]	-.[illegible]	-.[illegible]	.[illegible]	-.[illegible]	.[illegible]	-.[illegible]	.[illegible]		
28	.2227E+03	.1074E+01	.2[illegible]	-.[illegible]	-.[illegible]	.[illegible]	-.[illegible]	.[illegible]	-.[illegible]	.[illegible]		
29	.2999E+03	.1051E+01	.3[illegible]	-.[illegible]	-.[illegible]	.[illegible]	.[illegible]	.[illegible]	-.[illegible]	.[illegible]		
30	.2803E+03	.1049E+01	.[illegible]	-.[illegible]	-.[illegible]	.[illegible]	.[illegible]	.[illegible]	-.[illegible]	.[illegible]		
31	.2500E+03	.1[illegible]	.[illegible]	-.[illegible]	-.[illegible]	.[illegible]	.[illegible]	.[illegible]	-.[illegible]	.[illegible]		
32	.2283E+03	.1054E+01	.7[illegible]	-.[illegible]	-.[illegible]	.[illegible]	.[illegible]	.[illegible]	-.[illegible]	.[illegible]		
33	.1965E+03	.1[illegible]	.[illegible]	-.[illegible]	-.[illegible]	.[illegible]	.[illegible]	.[illegible]	-.[illegible]	.[illegible]		
34	.1690E+03	.1[illegible]	.[illegible]	-.[illegible]	-.[illegible]	.[illegible]	.[illegible]	.[illegible]	-.[illegible]	.[illegible]		
35	.1800E+03	.1[illegible]	.[illegible]	-.[illegible]	-.[illegible]	.[illegible]	.[illegible]	.[illegible]	-.[illegible]	.[illegible]		
36	.1526E+03	.1029E+01	.1[illegible]	-.[illegible]	-.[illegible]	.[illegible]	.[illegible]	.[illegible]	-.[illegible]	.[illegible]		
37	.1149E+03	.1[illegible]	.[illegible]	-.[illegible]	-.[illegible]	.[illegible]	.[illegible]	.[illegible]	-.[illegible]	.[illegible]		
38	.1147E+03	.1[illegible]	.[illegible]	-.[illegible]	-.[illegible]	.[illegible]	.[illegible]	.[illegible]	-.[illegible]	.[illegible]		
39	.1095E+03	.1039E+01	.3[illegible]	-.[illegible]	-.[illegible]	.[illegible]	.[illegible]	.[illegible]	-.[illegible]	.[illegible]		
40	.7777E+02	.1011E+01	.[illegible]	-.[illegible]	-.[illegible]	.[illegible]	.[illegible]	.[illegible]	-.[illegible]	.[illegible]		
41	.1323E+02	.1055E+01	.6[illegible]	-.[illegible]	-.[illegible]	.[illegible]	.[illegible]	.[illegible]	-.[illegible]	.[illegible]		
42	.8163E+01	.1[illegible]	.[illegible]	-.[illegible]	-.[illegible]	.[illegible]	.[illegible]	.[illegible]	-.[illegible]	.[illegible]		
43	.7[illegible]	.2[illegible]	.[illegible]	-.[illegible]	-.[illegible]	.[illegible]	.[illegible]	.[illegible]	-.[illegible]	.[illegible]		
44	.1440E+02	.1107E+01	.9[illegible]	-.[illegible]	-.[illegible]	.[illegible]	.[illegible]	.[illegible]	-.[illegible]	.[illegible]		
45	.7177E+01	.8064E+01	.9[illegible]	-.[illegible]	-.[illegible]	.[illegible]	.[illegible]	.[illegible]	-.[illegible]	.[illegible]		
46	.6018E+01	.1042E+02	.9895E+01	0.	.9925E+00	.1964E 12	0.	.1650E+00	.1405E+02	.564[illegible]		

SECOND INDEX= 20

IST	P/PINF	RHO/RHOINF	U/QINF	V/QINF	ET/ETINF	S/SINF	MI/MIINF	MACH	UBAR/QINF	VBAR/QINF	CP
1	.2913E+01	.1015E+01	.8427E+00	-.8[illegible]	.1804E+01	.10[illegible]	.1024E+01	.1540E+01	-.8427E+00	.8597E-02	.9622E+00
2	.2914E+01	.1014E+01	.8424E+00	-.8[illegible]	.1805E+01	.10[illegible]	.1027E+01	.1540E+01	-.8435E+00	.8[illegible]	.9629E+00
3	.2909E+01	.1775E+01	.8411E+00	-.1[illegible]	.1718E+01	.10[illegible]	.1018E+01	.1540E+01	-.8418E+00	-.5[illegible]	.9614E+00
4	.2177E+01	.1[illegible]	.8[illegible]	-.1[illegible]	.1[illegible]	.10[illegible]	.1008E+01	.1559E+01	-.8[illegible]	-.2[illegible]	.9[illegible]
5	.2169E+01	.1001E+01	.8[illegible]	.2[illegible]	.1[illegible]	.10[illegible]	.1003E+01	.1594E+01	-.8[illegible]	.9[illegible]	.9[illegible]
6	.2223E+01	.1767E+01	.8[illegible]	.7[illegible]	.1[illegible]	.10[illegible]	.1013E+01	.1542E+01	-.8[illegible]	.7[illegible]	.9[illegible]
7	.2[illegible]	.1[illegible]	.8[illegible]	.1[illegible]	.1[illegible]	.10[illegible]	.1014E+01	.1536E+01	-.8[illegible]	.1[illegible]	.9[illegible]
8	.2[illegible]	.1[illegible]	.8[illegible]	.1[illegible]	.1[illegible]	.10[illegible]	.1019E+01	.1527E+01	-.8[illegible]	.[illegible]	.9[illegible]
9	.2[illegible]	.1[illegible]	.7[illegible]	.2[illegible]	.1[illegible]	.10[illegible]	.1023E+01	.1[illegible]	-.8[illegible]	.1[illegible]	.9[illegible]
10	.2[illegible]	.1[illegible]	.7[illegible]	.2[illegible]	.1[illegible]	.10[illegible]	.1[illegible]	.1[illegible]	-.8[illegible]	.7[illegible]	.9[illegible]
11	.2[illegible]	.2[illegible]	.7[illegible]	.2[illegible]	.1[illegible]	.10[illegible]	.1[illegible]	.1[illegible]	-.8[illegible]	.1[illegible]	.9[illegible]
12	.2[illegible]	.2[illegible]	.7[illegible]	.2[illegible]	.1[illegible]	.10[illegible]	.1[illegible]	.1[illegible]	-.8[illegible]	.[illegible]	.9[illegible]
13	.3[illegible]	.2[illegible]	.7[illegible]	.2[illegible]	.1[illegible]	.10[illegible]	.1[illegible]	.1[illegible]	-.8[illegible]	.[illegible]	.9[illegible]
14	.3[illegible]	.2[illegible]	.7[illegible]	.2[illegible]	.1[illegible]	.10[illegible]	.1[illegible]	.1[illegible]	-.8[illegible]	.[illegible]	.9[illegible]
15	.3[illegible]	.2[illegible]	.7[illegible]	.2[illegible]	.1[illegible]	.10[illegible]	.1[illegible]	.1[illegible]	-.8[illegible]	.[illegible]	.9[illegible]
16	.2[illegible]	.1[illegible]	.7[illegible]	.2[illegible]	.1[illegible]	.10[illegible]	.1[illegible]	.1[illegible]	-.8[illegible]	.[illegible]	.9[illegible]
17	.2[illegible]	.1[illegible]	.7[illegible]	.2[illegible]	.1[illegible]	.10[illegible]	.1[illegible]	.1[illegible]	-.8[illegible]	.[illegible]	.9[illegible]
18	.2[illegible]	.1[illegible]	.8[illegible]	.1[illegible]	.1[illegible]	.10[illegible]	.1[illegible]	.1[illegible]	-.8[illegible]	.[illegible]	.9[illegible]
19	.2[illegible]	.1[illegible]	.8[illegible]	.1[illegible]	.1[illegible]	.10[illegible]	.1[illegible]	.1[illegible]	-.8[illegible]	.[illegible]	.9[illegible]
20	.1[illegible]	.1[illegible]	.8[illegible]	.1[illegible]	.1[illegible]	.10[illegible]	.1[illegible]	.1[illegible]	-.8[illegible]	.[illegible]	.9[illegible]
21	.1[illegible]	.1[illegible]	.8[illegible]	.1[illegible]	.1[illegible]	.10[illegible]	.1[illegible]	.1[illegible]	-.8[illegible]	.[illegible]	.9[illegible]
22	.1[illegible]	.1[illegible]	.8[illegible]	.1[illegible]	.1[illegible]	.10[illegible]	.1[illegible]	.1[illegible]	-.8[illegible]	.[illegible]	.9[illegible]
23	.1[illegible]	.1[illegible]	.8[illegible]	.1[illegible]	.1[illegible]	.10[illegible]	.1[illegible]	.1[illegible]	-.8[illegible]	.[illegible]	.9[illegible]
24	.1[illegible]	.1[illegible]	.8[illegible]	.1[illegible]	.1[illegible]	.10[illegible]	.1[illegible]	.1[illegible]	-.8[illegible]	.[illegible]	.9[illegible]
25	.1[illegible]	.1[illegible]	.8[illegible]	.1[illegible]	.1[illegible]	.10[illegible]	.1[illegible]	.1[illegible]	-.8[illegible]	.[illegible]	.9[illegible]
26	.1[illegible]	.1[illegible]	.8[illegible]	.1[illegible]	.1[illegible]	.10[illegible]	.1[illegible]	.1[illegible]	-.8[illegible]	.[illegible]	.9[illegible]
27	.1[illegible]	.1[illegible]	.8[illegible]	.1[illegible]	.1[illegible]	.10[illegible]	.1[illegible]	.1[illegible]	-.8[illegible]	.[illegible]	.9[illegible]
28	.1[illegible]	.1[illegible]	.8[illegible]	.1[illegible]	.1[illegible]	.10[illegible]	.1[illegible]	.1[illegible]	-.8[illegible]	.[illegible]	.9[illegible]
29	.1[illegible]	.1[illegible]	.8[illegible]	.1[illegible]	.1[illegible]	.10[illegible]	.1[illegible]	.1[illegible]	-.8[illegible]	.[illegible]	.9[illegible]
30	.1[illegible]	.1[illegible]	.8[illegible]	.1[illegible]	.1[illegible]	.10[illegible]	.1[illegible]	.1[illegible]	-.8[illegible]	.[illegible]	.9[illegible]
31	.1[illegible]	.1[illegible]	.8[illegible]	.1[illegible]	.1[illegible]	.10[illegible]	.1[illegible]	.1[illegible]	-.8[illegible]	.[illegible]	.9[illegible]
32	.1750E+01	.1[illegible]	.8[illegible]	.1[illegible]	.1[illegible]	.10[illegible]	.1[illegible]	.1[illegible]	-.8[illegible]	.[illegible]	.9[illegible]
33	.1522E+01	.1[illegible]	.9[illegible]	.1[illegible]	.1[illegible]	.10[illegible]	.1[illegible]	.1[illegible]	-.8[illegible]	.[illegible]	.9[illegible]
34	.1127E+01	.1[illegible]	.9[illegible]	.1[illegible]	.1[illegible]	.10[illegible]	.1[illegible]	.1[illegible]	-.8[illegible]	.[illegible]	.9[illegible]
35	.9[illegible]	.9[illegible]	.1[illegible]	.[illegible]	.[illegible]	.[illegible]	.[illegible]	.[illegible]	-.[illegible]	.[illegible]	.[illegible]
36	.9[illegible]	.9[illegible]	.1[illegible]	.[illegible]	.[illegible]	.[illegible]	.[illegible]	.[illegible]	-.[illegible]	.[illegible]	.[illegible]
37	.1[illegible]	.9[illegible]	.1[illegible]	.[illegible]	.[illegible]	.[illegible]	.[illegible]	.[illegible]	-.[illegible]	.[illegible]	.[illegible]
38	.9[illegible]	.1[illegible]	.[illegible]	.[illegible]	.[illegible]	.[illegible]	.[illegible]	.[illegible]	-.[illegible]	.[illegible]	.[illegible]

39	.9935E+00	.9997E+00	.1001E+01	[illegible] -03	[illegible]	[illegible]	[illegible]	.2094E+01	-.8125E+01	-.8194E+01	-.2119E-02
40	.1018E+01	[illegible]	[illegible]	-.1[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	-.1[illegible]	-.1[illegible]	.3194E-02
41	.1036E+01	.5[illegible]	[illegible]	[illegible]	.10[illegible]	[illegible]	[illegible]	[illegible]	-.[illegible]	-.[illegible]	[illegible]
42	.1175E+01	.11[illegible]	[illegible]	[illegible]	.111[illegible]	[illegible]	[illegible]	[illegible]	-.[illegible]	-.1[illegible]	[illegible]
43	.1751E+01	.1525E+01	.9[illegible]	[illegible]	.13[illegible]	[illegible]	[illegible]	[illegible]	.545[illegible]	-.1[illegible]	.819[illegible]
44	.1247E+01	.2006E+01	.97[illegible]	.8[illegible] -01	.16[illegible]	[illegible]	[illegible]	.2[illegible]+01	.1[illegible]+01	.2[illegible]	.8[illegible]-01
45	.1525E+01	.2[illegible]+01	.97[illegible]	.116[illegible]	[illegible]	[illegible]	[illegible]	.2[illegible]+01	.10[illegible]	.1[illegible]	.105[illegible]+00
46	.1525E+01	.2[illegible]+01	.97[illegible]	.119[illegible]	.10[illegible]	[illegible]	[illegible]	.2[illegible]+01	.9[illegible]	[illegible]	.105[illegible]

IST	JACOBIAN	X	Y	DXI/DT	DXI/DX	DXI/DY	DETA/DT	DETA/DX	DETA/DY	[illegible]
1	.9[illegible]+01	.13[illegible]+02	[illegible]+01	0.	-.[illegible]		0.	.551[illegible]	-.[illegible]	.1[illegible]+01
2	.1[illegible]	.1[illegible]	[illegible]	.1[illegible]	-.[illegible]	[illegible]	[illegible] 05	[illegible]	-.[illegible]	.1[illegible]+01
3	.1615E+02	.1[illegible]+02	.2[illegible]+01	.1[illegible]	-.[illegible]	[illegible]	[illegible]	-.8[illegible]+00	-.5[illegible]	.1[illegible]+01
4	.2251E+02	.1001E+02	.21[illegible]+01	.7[illegible] 05	-.4[illegible]	.1[illegible]	[illegible] 05	-.1[illegible]+01	-.5[illegible]	.127[illegible]+01
5	.3376E+02	.9[illegible]+01	.21[illegible]+01	.551[illegible] 05	-.101[illegible]+01	.1[illegible]	.551[illegible] 05	.12[illegible]+01	-.5[illegible]	.127[illegible]+01
6	.5967E+02	.8050E+01	.2111E+01	.5[illegible] 05	-.1[illegible]+01	.11[illegible]+01	[illegible] 05	.4[illegible]+01	-.4[illegible]+02	.12[illegible]+01
7	.9122E+02	.7520E+01	.2[illegible]+01	.3[illegible] 05	-.2[illegible]+01	.1[illegible]+01	.2[illegible] 05	.8[illegible]+01	-.9[illegible]+02	.1[illegible]+01
8	.1376E+03	.7013E+01	.1[illegible]+01	.1[illegible] 05	-.[illegible]+01	.3[illegible]	.1[illegible] 05	.1[illegible]	-.8[illegible]+02	.15[illegible]+01
9	.2018E+03	.6[illegible]+01	.1[illegible]+01	.7[illegible] 06	-.1[illegible]+01	.5[illegible]	.9[illegible] 06	.2[illegible]+02	-.1[illegible]+03	.1[illegible]+01
10	.2725E+03	.6[illegible]+01	.1[illegible]+01	.5[illegible] 06	-.[illegible]+01	.[illegible]	.5[illegible] 06	.4[illegible]+02	-.1[illegible]+03	.1[illegible]+01
11	.2548E+03	.5[illegible]+01	.14[illegible]+01	.5[illegible] 06	-.[illegible]+01	.3[illegible]	.[illegible] 06	.3[illegible]+02	-.1[illegible]+03	.1[illegible]+01
12	.2[illegible]+03	.5[illegible]+01	.1[illegible]+01	.63[illegible] 06	-.[illegible]+01	.[illegible]	.[illegible] 06	.41[illegible]+02	-.11[illegible]+03	.11[illegible]+01
13	.2051E+03	.4[illegible]+01	.111[illegible]	.4[illegible] 06	-.9[illegible]+01	.[illegible]	.[illegible] 07	.5[illegible]+02	-.10[illegible]+03	.1[illegible]+01
14	.1[illegible]+03	.4[illegible]+01	.9[illegible]	.4[illegible] 06	-.[illegible]+01	.[illegible]	-.7[illegible] 07	.31[illegible]+02	-.[illegible]+02	.1[illegible]+01
15	.1831E+03	.3[illegible]+01	.7[illegible]+00	.[illegible] 06	-.[illegible]+01	.5[illegible]	-.1[illegible] 06	.2[illegible]+02	-.7[illegible]+02	.13[illegible]+01
16	.1[illegible]+03	.3[illegible]+01	.67[illegible]+00	.[illegible] 06	-.[illegible]+01	.5[illegible]	-.1[illegible] 06	.1[illegible]+02	-.6[illegible]+02	.1[illegible]+01
17	.1[illegible]+03	.29[illegible]+01	.5[illegible]+00	.51[illegible] 06	-.[illegible]+01	.5[illegible]	[illegible] 07	.1[illegible]+02	-.5[illegible]+02	.1[illegible]+01
18	.1759E+03	.2[illegible]+01	.5[illegible]+00	.[illegible] 06	-.[illegible]+01	.[illegible]	.[illegible] 07	.1[illegible]+02	-.5[illegible]+02	.12[illegible]+01
19	.1658E+03	.2[illegible]+01	.[illegible]+00	.2[illegible] 06	-.[illegible]+01	.511[illegible]	.1[illegible] 06	.1[illegible]+02	-.[illegible]+02	.12[illegible]+01
20	.1908E+03	.20[illegible]+01	.3[illegible]+00	.1[illegible] 06	-.5[illegible]+01	.5[illegible]	.13[illegible] 06	.915[illegible]+01	-.4[illegible]+02	.1[illegible]+01
21	.2[illegible]+03	.18[illegible]+01	.35[illegible]+00	.7[illegible] 08	-.4[illegible]+01	.6[illegible]	.3[illegible] 07	.8[illegible]+01	-.4[illegible]+02	.11[illegible]+01
22	.2756E+03	.163[illegible]+01	.31[illegible]+00	-.4[illegible] 07	-.8[illegible]+01	.8[illegible]	-.45[illegible] 08	.7[illegible]+01	-.4[illegible]+02	.11[illegible]+01
23	.3[illegible]+03	.15[illegible]+01	.30[illegible]+00	-.[illegible] 07	-.11[illegible]+02	.1[illegible]	-.2[illegible] 07	.57[illegible]+01	-.3[illegible]+02	.117[illegible]+01
24	.3[illegible]+03	.14[illegible]+01	.2[illegible]+00	-.3[illegible] 07	-.11[illegible]+02	.9[illegible]	-.5[illegible] 07	.55[illegible]+01	-.35[illegible]+02	.11[illegible]+01
25	.3[illegible]+03	.13[illegible]+01	.27[illegible]+00	-.2[illegible] 07	-.11[illegible]+02	.8[illegible]	-.2[illegible] 07	.5[illegible]+01	-.3[illegible]+02	.11[illegible]+01
26	.3[illegible]+03	.12[illegible]+01	.25[illegible]+00	-.1[illegible] 07	-.11[illegible]+02	.[illegible]	.1[illegible] 07	.5[illegible]+01	-.3[illegible]+02	.11[illegible]+01
27	.3012E+03	.112[illegible]+01	.2[illegible]+00	-.2[illegible] 08	-.10[illegible]+02	.[illegible]	-.[illegible] 08	.[illegible]+01	-.3[illegible]+02	.11[illegible]+01
28	.3[illegible]+03	.102[illegible]+01	.22[illegible]+00	.12[illegible] 08	-.1[illegible]+02	.[illegible]	.[illegible] 09	-.11[illegible]+02	-.1[illegible]+02	.11[illegible]+01
29	.5217E+03	.1625E+01	.2[illegible]+00	.1[illegible] 08	-.[illegible]+02	.1[illegible]	.12[illegible] 08	-.[illegible]+02	-.111[illegible]+01	.11[illegible]+01
30	.4[illegible]+03	.1025E+01	.3[illegible]+00	.8[illegible] 09	-.1[illegible]+02	.9[illegible]	.7[illegible] 09	-.[illegible]+02	-.10[illegible]+01	.1[illegible]+01
31	.4375E+03	.1021E+01	.[illegible]+00	.[illegible] 09	-.101[illegible]+02	.8[illegible]	.[illegible] 09	-.551[illegible]+02	-.91[illegible]+00	.11[illegible]+01
32	.3[illegible]+03	.101[illegible]+01	.651[illegible]+00	.1[illegible] 09	-.1[illegible]+02	.6[illegible]	.[illegible] 09	-.60[illegible]+02	-.8[illegible]+00	.11[illegible]+01
33	.3430E+03	.1017E+01	.8[illegible]+00	-.[illegible] 10	-.1[illegible]+02	.9[illegible]	[illegible] 11	-.8[illegible]+02	-.5[illegible]+00	.11[illegible]+01
34	.2958E+03	.1014E+01	.105[illegible]+01	-.2[illegible] 09	-.1[illegible]+02	.1[illegible]	.1[illegible] 09	-.7[illegible]+02	-.4[illegible]+00	.1[illegible]+01
35	.3[illegible]+03	.101[illegible]+01	.1[illegible]+01	-.1[illegible] 09	-.1[illegible]+02	.1[illegible]	.81[illegible] 10	-.8[illegible]+02	-.[illegible]+00	.9[illegible]+00
36	.2751E+03	.1011E+01	.15[illegible]+01	-.3[illegible] 09	-.12[illegible]+02	.2[illegible]	.6[illegible] 09	-.10[illegible]+03	-.37[illegible]+00	.9[illegible]+00
37	.2[illegible]+03	.1011E+01	.20[illegible]+01	-.881[illegible] 09	-.9[illegible]+01	.1[illegible]	.1[illegible] 08	-.1[illegible]+03	-.5[illegible]-01	.1[illegible]+01
38	.2[illegible]+03	.1[illegible]+01	.2[illegible]+01	.2[illegible] 08	-.10[illegible]+02	.1[illegible]	.[illegible] 08	-.1[illegible]+03	-.4[illegible]+00	.[illegible]+00
39	.2[illegible]+03	.10[illegible]+01	.30[illegible]+01	.7[illegible] 08	-.10[illegible]+02	.1[illegible]	[illegible] 07	-.1[illegible]+03	-.5[illegible]+00	.9[illegible]+00
40	.1[illegible]+03	.10[illegible]+01	.4[illegible]+01	-.1[illegible] 06	-.8[illegible]+01	.[illegible]	.[illegible] 05	-.2[illegible]+03	.34[illegible]+01	.101[illegible]+01
41	.2[illegible]+02	.10[illegible]+01	.6[illegible]+01	-.11[illegible] 05	-.10[illegible]+01	.51[illegible]	.1[illegible] 05	-.[illegible]+02	.5[illegible]+00	.10[illegible]+01
42	.1376E+02	.10[illegible]+01	.8[illegible]+01	.8[illegible] 05	-.1[illegible]+01	.[illegible]	.1[illegible] 05	-.2[illegible]+02	.10[illegible]+01	.10[illegible]+01
43	.1947E+02	.2[illegible]+01	.99[illegible]+01	.3[illegible] 04	.2[illegible]+00	.[illegible]+00	.[illegible] 04	-.1[illegible]+02	.2[illegible]+02	.81[illegible]+00
44	.2[illegible]+02	.50[illegible]+01	.99[illegible]+01	.9[illegible] 04	.3[illegible]+00	.5[illegible]+01	.8[illegible] 04	.25[illegible]+00	.67[illegible]+02	.4[illegible]+00
45	.1181E+02	.8[illegible]+01	.99[illegible]+01	.1[illegible] 03	.3[illegible]+00	.3[illegible]+00	.2[illegible] 03	.2[illegible]+00	.3[illegible]+02	.5[illegible]+00
46	.1101E+02	.10[illegible]+02	.99[illegible]+01	0.	.9[illegible]+00	0.	0.	.15[illegible]+00	.2[illegible]+02	.5[illegible]+00

SECOND INDEX = 21

IST	P/PINF	RHO/RHOINF	U/QINF	V/QINF	T/TINF	S/SINF	HT/HTINF	MACH	UBAR/QINF	VBAR/QINF	CP
1	.24[illegible]+01	.185[illegible]+01	.87[illegible]+00	-.1[illegible]	.10[illegible]+01	.10[illegible]+01	.1[illegible]+01	.1[illegible]+01	-.8[illegible]+00	[illegible]	.9675E+00
2	.2456E+01	.1855E+01	.87[illegible]+00	-.5[illegible]	.10[illegible]+01	.1[illegible]	.1[illegible]+01	.1[illegible]+01	-.85[illegible]+00	.5[illegible] 02	.9676E+00
3	.2258E+01	.175[illegible]+01	.8[illegible]+00	-.1[illegible]	.10[illegible]+01	.1[illegible]	.1[illegible]+01	.1[illegible]+01	-.8[illegible]+00	-.[illegible] 02	.9119E+00
4	.2136E+01	.167[illegible]+01	.85[illegible]+00	-.1[illegible] 01	.1[illegible]+01	.1[illegible]	.1[illegible]+01	.15[illegible]+01	-.8[illegible]+00	-.1[illegible] 01	.3651E+00
5	.2156E+01	.16[illegible]+01	.8[illegible]+00	.2[illegible] 01	.1[illegible]+01	.1[illegible]	.1[illegible]+01	.15[illegible]+01	-.8[illegible]+00	.1[illegible] 02	.3714E+00
6	.2[illegible]+01	.17[illegible]+01	.8[illegible]+00	.[illegible] 01	.1[illegible]+01	.1[illegible]	.1[illegible]+01	.15[illegible]+01	-.8[illegible]+00	.1[illegible] 02	.3[illegible]+00
7	.22[illegible]+01	.17[illegible]+01	.8[illegible]+00	.1[illegible]	.171[illegible]+01	.1[illegible]	.1[illegible]+01	.15[illegible]+01	-.9[illegible]+00	.3[illegible] 02	.42[illegible]+00
8	.2[illegible]+01	.16[illegible]+01	.8[illegible]+00	.1[illegible]	.17[illegible]+01	.1[illegible]	.1[illegible]+01	.15[illegible]+01	-.8[illegible]+00	.2[illegible] 01	.4[illegible]+00

9	.2[illegible]E+01	.1[illegible]E+01	.[illegible]E+00	.[illegible]E+00	.[illegible]E+00	.[illegible]E+00	.[illegible]E+01	-.[illegible]E+00	-.[illegible]E-01	.[illegible]E+00
10	.2[illegible]E+01	.1[illegible]E+01	.[illegible]E+00	.[illegible]E+00	.[illegible]E+00	.[illegible]E+00	.[illegible]E+01	-.[illegible]E+00	-.[illegible]E-01	.[illegible]E+00
11	.2[illegible]E+01	.2[illegible]E+01	.[illegible]E+00	.[illegible]E+00	.[illegible]E+00	.[illegible]E+00	.[illegible]E+01	-.[illegible]E+00	-.[illegible]E-01	.[illegible]E+00
12	.2[illegible]E+01	.2[illegible]E+01	.[illegible]E+00	.[illegible]E+00	.[illegible]E+00	.[illegible]E+00	.[illegible]E+01	-.[illegible]E+00	-.[illegible]E-01	.[illegible]E+00
13	.3[illegible]E+01	.2[illegible]E+01	.[illegible]E+00	.[illegible]E+00	.[illegible]E+00	.[illegible]E+00	.[illegible]E+01	-.[illegible]E+00	-.[illegible]E-01	.[illegible]E+00
14	.3[illegible]E+01	.2[illegible]E+01	.[illegible]E+00	.[illegible]E+00	.[illegible]E+00	.[illegible]E+00	.[illegible]E+01	-.[illegible]E+00	-.[illegible]E-01	.[illegible]E+00
15	.2[illegible]E+01	.[illegible]E+01	.[illegible]E+00	.[illegible]E+00	.[illegible]E+00	.[illegible]E+00	.[illegible]E+01	-.[illegible]E+00	-.[illegible]E-01	.[illegible]E+00
16	.2[illegible]E+01	.1[illegible]E+01	.[illegible]E+00	.[illegible]E+00	.[illegible]E+00	.[illegible]E+00	.[illegible]E+01	-.[illegible]E+00	-.[illegible]E-01	.[illegible]E+00
17	.2[illegible]E+01	.1[illegible]E+01	.[illegible]E+00	.[illegible]E+00	.[illegible]E+00	.[illegible]E+00	.[illegible]E+01	-.[illegible]E+00	-.[illegible]E-01	.[illegible]E+00
18	.2[illegible]E+01	.1[illegible]E+01	.[illegible]E+00	.[illegible]E+00	.[illegible]E+00	.[illegible]E+00	.[illegible]E+01	-.[illegible]E+00	-.[illegible]E-01	.[illegible]E+00
19	.2[illegible]E+01	.1[illegible]E+01	.[illegible]E+00	.[illegible]E+00	.[illegible]E+00	.[illegible]E+00	.[illegible]E+01	-.[illegible]E+00	-.[illegible]E-01	.[illegible]E+00
20	.1[illegible]E+01	.1[illegible]E+01	.[illegible]E+00	.[illegible]E+00	.[illegible]E+00	.[illegible]E+00	.[illegible]E+01	-.[illegible]E+00	-.[illegible]E-01	.[illegible]E+00
21	.1[illegible]E+01	.1[illegible]E+01	.[illegible]E+00	.[illegible]E+00	.[illegible]E+00	.[illegible]E+00	.[illegible]E+01	-.[illegible]E+00	-.[illegible]E-01	.[illegible]E+00
22	.1[illegible]E+01	.1[illegible]E+01	.[illegible]E+00	.[illegible]E+00	.[illegible]E+00	.[illegible]E+00	.[illegible]E+01	-.[illegible]E+00	-.[illegible]E-01	.[illegible]E+00
23	.1[illegible]E+01	.1[illegible]E+01	.[illegible]E+00	.[illegible]E+00	.[illegible]E+00	.[illegible]E+00	.[illegible]E+01	-.[illegible]E+00	-.[illegible]E-01	.[illegible]E+00
24	.1[illegible]E+01	.1[illegible]E+01	.[illegible]E+00	.[illegible]E+00	.[illegible]E+00	.[illegible]E+00	.[illegible]E+01	-.[illegible]E+00	-.[illegible]E-01	.[illegible]E+00
25	.1[illegible]E+01	.1[illegible]E+01	.[illegible]E+00	.[illegible]E+00	.[illegible]E+00	.[illegible]E+00	.[illegible]E+01	-.[illegible]E+00	-.[illegible]E-01	.[illegible]E+00
26	.1[illegible]E+01	.1[illegible]E+01	.[illegible]E+00	.[illegible]E+00	.[illegible]E+00	.[illegible]E+00	.[illegible]E+01	-.[illegible]E+00	-.[illegible]E-01	.[illegible]E+00
27	.1[illegible]E+01	.1[illegible]E+01	.[illegible]E+00	.[illegible]E+00	.[illegible]E+00	.[illegible]E+00	.[illegible]E+01	-.[illegible]E+00	-.[illegible]E-01	.[illegible]E+00
28	.1[illegible]E+01	.1[illegible]E+01	.[illegible]E+00	.[illegible]E+00	.[illegible]E+00	.[illegible]E+00	.[illegible]E+01	-.[illegible]E+00	-.[illegible]E-01	.[illegible]E+00
29	.1[illegible]E+01	.1[illegible]E+01	.[illegible]E+00	.[illegible]E+00	.[illegible]E+00	.[illegible]E+00	.[illegible]E+01	-.[illegible]E+00	-.[illegible]E-01	.[illegible]E+00
30	.1[illegible]E+01	.1[illegible]E+01	.[illegible]E+00	.[illegible]E+00	.[illegible]E+00	.[illegible]E+00	.[illegible]E+01	-.[illegible]E+00	-.[illegible]E-01	.[illegible]E+00
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SECOND INDEX= 22

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2	.2929E+01	.1857E+01	.8548E+00	0.	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.8[illegible]E+00	0.	.9[illegible]E+00
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5	.2194E+01	.1[illegible]E+01	.8[illegible]E+00	.2[illegible]E-01	.1[illegible]E+01	.1[illegible]E+01	.9[illegible]E+00	.1[illegible]E+01	-.8[illegible]E+00	-.1[illegible]E-15	.3[illegible]E+00
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17	.2998E+01	.1[illegible]E+01	.7[illegible]E+00	.1[illegible]E+00	.1[illegible]E+01	.1[illegible]E+01	.9[illegible]E+00	.1[illegible]E+01	-.7[illegible]E+00	0.	.9[illegible]E+00
18	.2[illegible]E+01	.1[illegible]E+01	.7[illegible]E+00	.1[illegible]E+00	.1[illegible]E+01	.1[illegible]E+01	.9[illegible]E+00	.1[illegible]E+01	-.8[illegible]E+00	-.3[illegible]E-14	.9[illegible]E+00
19	.2018E+01	.1[illegible]E+01	.8[illegible]E+00	.1[illegible]E+00	.1[illegible]E+01	.1[illegible]E+01	.9[illegible]E+00	.1[illegible]E+01	-.8[illegible]E+00	0.	.1[illegible]E+00
20	.1873E+01	.1555E+01	.8[illegible]E+00	.1[illegible]E+00	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.9[illegible]E+00	0.	.2[illegible]E+00
21	.1774E+01	.1[illegible]E+01	.9[illegible]E+00	.1[illegible]E+00	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.9[illegible]E+00	-.1[illegible]E-14	.2[illegible]E+00
22	.1721E+01	.1[illegible]E+01	.9[illegible]E+00	.1[illegible]E+00	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.9[illegible]E+00	.1[illegible]E-14	.2[illegible]E+00
23	.1716E+01	.1[illegible]E+01	.9[illegible]E+00	.1[illegible]E+00	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.9[illegible]E+00	0.	.2[illegible]E+00
24	.1721E+01	.1[illegible]E+01	.9[illegible]E+00	.1[illegible]E+00	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.9[illegible]E+00	0.	.2[illegible]E+00
25	.1744E+01	.1[illegible]E+01	.9[illegible]E+00	.1[illegible]E+00	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.9[illegible]E+00	0.	.2[illegible]E+00
26	.1754E+01	.1[illegible]E+01	.9[illegible]E+00	.1[illegible]E+00	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.9[illegible]E+00	.3[illegible]E-14	.2[illegible]E+00
27	.1766E+01	.1[illegible]E+01	.8[illegible]E+00	.1[illegible]E+00	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.8[illegible]E+00	0.	.2[illegible]E+00
28	.1772E+01	.1[illegible]E+01	.8[illegible]E+00	.1[illegible]E+00	.1[illegible]E+01	.1[illegible]E+01	.9[illegible]E+00	.1[illegible]E+01	-.8[illegible]E+00	-.5[illegible]E+00	.2[illegible]E+00
29	.1774E+01	.1[illegible]E+01	.8[illegible]E+00	.1[illegible]E+00	.1[illegible]E+01	.1[illegible]E+01	.9[illegible]E+00	.1[illegible]E+01	-.8[illegible]E+00	-.1[illegible]E+01	.2[illegible]E+00
30	.1775E+01	.1[illegible]E+01	.8[illegible]E+00	.1[illegible]E+00	.1[illegible]E+01	.1[illegible]E+01	.9[illegible]E+00	.1[illegible]E+01	-.8[illegible]E+00	-.2[illegible]E+01	.2[illegible]E+00
31	.1775E+01	.1[illegible]E+01	.8[illegible]E+00	.1[illegible]E+00	.1[illegible]E+01	.1[illegible]E+01	.9[illegible]E+00	.1[illegible]E+01	-.8[illegible]E+00	-.2[illegible]E+01	.2[illegible]E+00
32	.1775E+01	.1[illegible]E+01	.8[illegible]E+00	.1[illegible]E+00	.1[illegible]E+01	.1[illegible]E+01	.9[illegible]E+00	.1[illegible]E+01	-.8[illegible]E+00	-.2[illegible]E+01	.2[illegible]E+00
33	.1775E+01	.1[illegible]E+01	.8[illegible]E+00	.1[illegible]E+00	.1[illegible]E+01	.1[illegible]E+01	.9[illegible]E+00	.1[illegible]E+01	-.8[illegible]E+00	-.2[illegible]E+01	.2[illegible]E+00
34	.1008E+01	.1[illegible]E+01	.1[illegible]E+01	0.	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.3[illegible]E+01	-.9[illegible]E-13	
35	.1008E+01	.1[illegible]E+01	.1[illegible]E+01	0.	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.9[illegible]E+01	-.1[illegible]E+01	.1[illegible]E-11
36	.1008E+01	.1[illegible]E+01	.1[illegible]E+01	0.	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.5[illegible]E+01	-.5[illegible]E+01	.1[illegible]E-12
37	.1008E+01	.1[illegible]E+01	.1[illegible]E+01	0.	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.5[illegible]E+01	-.5[illegible]E+01	.2[illegible]E-11
38	.1008E+01	.1[illegible]E+01	.1[illegible]E+01	0.	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.5[illegible]E+01	-.5[illegible]E+01	.3[illegible]E-12
39	.1008E+01	.1[illegible]E+01	.1[illegible]E+01	0.	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.6[illegible]E+02	-.1[illegible]E+02	.6[illegible]E-11
40	.1008E+01	.1[illegible]E+01	.1[illegible]E+01	0.	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.1[illegible]E+02	-.1[illegible]E+02	.1[illegible]E-11
41	.1008E+01	.1[illegible]E+01	.1[illegible]E+01	0.	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.2[illegible]E+01	-.2[illegible]E+01	.2[illegible]E-11
42	.1008E+01	.1[illegible]E+01	.1[illegible]E+01	0.	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.6[illegible]E+01	-.1[illegible]E+01	.9[illegible]E-14
43	.1008E+01	.1[illegible]E+01	.1[illegible]E+01	0.	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	-.9[illegible]E+00	-.6[illegible]E+00	.3[illegible]E-11
44	.1008E+01	.1[illegible]E+01	.1[illegible]E+01	0	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	0.	-.9[illegible]E-14	
45	.1008E+01	.1[illegible]E+01	.1[illegible]E+01	0.	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.9[illegible]E-11	.1[illegible]E-12	

46 .1000E+01 .1000E+01 .1000E+01 0. .1000E+01 .1000E+01 .1000E+01 .2000E+01 .1000E+01 .1000E-12 .1000E-12

IST	JACOBIAN	X	Y	DXI/DT	DXI/DX	DXI/DY	DETA/DT	DETA/DX	DETA/DY	[illegible]
1	.1718E+02	.1700E+02	.2050E+01	0.	[illegible]	[illegible]	0.	.2442E-12	-.6015E+02	.1311E+01
2	.2425E+02	.1400E+02	.2040E+01	0.	[illegible]	[illegible]	0.	0.	-.6057E+02	.1311E+01
3	.3066E+02	[illegible]	[illegible]	0.	[illegible]	[illegible]	0.	-.1657E+01	-.6011E+02	[illegible]
4	.4119E+02	[illegible]	[illegible]	0.	[illegible]	[illegible]	0.	-.2971E+01	-.6174E+02	[illegible]
5	.6000E+02	[illegible]	[illegible]	0.	[illegible]	[illegible]	0.	.1572E+01	[illegible]	.1278E+01
6	.1164E+03	[illegible]	[illegible]	0.	[illegible]	[illegible]	0.	.8146E+01	[illegible]	[illegible]
7	.1770E+03	[illegible]	[illegible]	0.	[illegible]	[illegible]	0.	.1512E+02	[illegible]	[illegible]
8	.2854E+03	.3000E+01	[illegible]	0.	-.2075E+01	[illegible]	0.	.3355E+02	-.1427E+03	.1305E+01
9	.4441E+03	[illegible]	[illegible]	0.	[illegible]	[illegible]	0.	.6604E+02	[illegible]	.1312E+01
10	.6311E+03	.4000E+01	[illegible]	0.	[illegible]	[illegible]	0.	.1024E+03	-.3156E+03	.1335E+01
11	.5994E+03	.5500E+01	[illegible]	0.	[illegible]	[illegible]	0.	.1095E+03	[illegible]	[illegible]
12	.5475E+03	.5000E+01	[illegible]	0.	[illegible]	[illegible]	0.	.9962E+02	-.2737E+03	.1378E+01
13	.5045E+03	.4500E+01	[illegible]	0.	[illegible]	[illegible]	0.	.9178E+02	-.2521E+03	[illegible]
14	.5167E+03	.4000E+01	[illegible]	0.	[illegible]	[illegible]	0.	.8557E+02	[illegible]	[illegible]
15	[illegible]	[illegible]	[illegible]	0.	[illegible]	[illegible]	0.	[illegible]	[illegible]	[illegible]
16	[illegible]	[illegible]	[illegible]	0.	[illegible]	[illegible]	0.	[illegible]	[illegible]	[illegible]
17	[illegible]	[illegible]	[illegible]	0.	[illegible]	[illegible]	0.	[illegible]	[illegible]	[illegible]
18	.4925E+03	.2600E+01	[illegible]	0.	[illegible]	[illegible]	0.	.3550E+02	-.1478E+03	.1278E+01
19	.4766E+03	.2300E+01	[illegible]	0.	[illegible]	[illegible]	0.	.2996E+02	-.1410E+03	.1235E+01
20	.5540E+03	.2000E+01	[illegible]	0.	-.5157E+01	[illegible]	0.	.2711E+02	[illegible]	[illegible]
21	.6550E+03	.1800E+01	[illegible]	0.	[illegible]	[illegible]	0.	.2405E+02	-.1311E+03	[illegible]
22	.8378E+03	.1600E+01	[illegible]	0.	[illegible]	[illegible]	0.	.2285E+02	-.1257E+03	[illegible]
23	.1151E+04	.1500E+01	[illegible]	0.	[illegible]	[illegible]	0.	[illegible]	-.1151E+03	.1171E+01
24	.1087E+04	.1400E+01	[illegible]	0.	[illegible]	[illegible]	0.	.1902E+02	-.1087E+03	.1174E+01
25	.1036E+04	[illegible]	[illegible]	0.	[illegible]	[illegible]	0.	.1817E+02	-.1036E+03	.1170E+01
26	[illegible]	[illegible]	[illegible]	0.	[illegible]	[illegible]	0.	[illegible]	[illegible]	[illegible]
27	[illegible]	[illegible]	[illegible]	0.	[illegible]	[illegible]	0.	[illegible]	[illegible]	[illegible]
28	[illegible]	[illegible]	[illegible]	0.	[illegible]	[illegible]	0.	[illegible]	[illegible]	[illegible]
29	.1805E+04	[illegible]	[illegible]	0.	[illegible]	[illegible]	0.	[illegible]	0.	[illegible]
30	.1707E+04	.1000E+01	[illegible]	0.	[illegible]	[illegible]	0.	-.1703E+03	0.	.1105E+01
31	.1535E+04	[illegible]	[illegible]	0.	[illegible]	[illegible]	0.	-.1918E+03	0.	[illegible]
32	[illegible]	[illegible]	[illegible]	0.	[illegible]	[illegible]	0.	[illegible]	0.	[illegible]
33	[illegible]	[illegible]	[illegible]	0.	[illegible]	[illegible]	0.	[illegible]	0.	[illegible]
34	[illegible]	[illegible]	[illegible]	0.	[illegible]	[illegible]	0.	[illegible]	0.	[illegible]
35	[illegible]	[illegible]	[illegible]	0.	[illegible]	[illegible]	0.	[illegible]	0.	[illegible]
36	[illegible]	[illegible]	[illegible]	0.	[illegible]	[illegible]	0.	[illegible]	0.	[illegible]
37	[illegible]	[illegible]	[illegible]	0.	[illegible]	[illegible]	[illegible]	[illegible]	0.	[illegible]
38	[illegible]	[illegible]	[illegible]	0.	[illegible]	[illegible]	[illegible]	[illegible]	0.	[illegible]
39	[illegible]	[illegible]	[illegible]	0.	[illegible]	[illegible]	[illegible]	[illegible]	0.	[illegible]
40	.7157E+03	[illegible]	[illegible]	0.	[illegible]	[illegible]	[illegible]	[illegible]	0.	[illegible]
41	[illegible]	[illegible]	[illegible]	0.	[illegible]	[illegible]	[illegible]	-.1707E+03	0.	[illegible]
42	.5153E+02	[illegible]	[illegible]	0.	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
43	[illegible]	[illegible]	[illegible]	0.	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
44	[illegible]	[illegible]	[illegible]	0.	[illegible]	[illegible]	[illegible]	0.	[illegible]	[illegible]
45	[illegible]	[illegible]	[illegible]	0.	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
46	[illegible]	[illegible]	[illegible]	0.	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

J,X,Y,(Q ,N=1,4),	P/PST AT K =	1					
1	.170000E+02	.357546E+01	.187[illegible]E+01	.315[illegible]E+01	0.	.711[illegible]E+01	.27[illegible]E+00
2	.140000E+02	.357546E+01	.187[illegible]E+01	.315[illegible]E+01	0.	.711[illegible]E+01	.27[illegible]E+00
3	.120000E+02	.357546E+01	.193[illegible]E+01	.329[illegible]E+01	0.	.734[illegible]E+01	.29[illegible]E+00
4	.100000E+02	.357546E+01	.2[illegible]E+01	.337[illegible]E+01	0.	.74[illegible]E+01	.31[illegible]E+00
5	.900000E+01	.357546E+01	.21[illegible]E+01	.34[illegible]E+01	[illegible]	.[illegible]E+01	.33[illegible]E+00
6	.800000E+01	.357546E+01	.2[illegible]E+01	.35[illegible]E+01	[illegible]	.[illegible]E+01	.35[illegible]E+00
7	.750000E+01	.347[illegible]E+01	.21[illegible]E+01	.3[illegible]E+01	[illegible]	.[illegible]E+01	.37[illegible]E+00
8	.725000E+01	.34[illegible]E+01	.23[illegible]E+01	.3[illegible]E+01	[illegible]	.[illegible]E+01	.38[illegible]E+00
9	.712500E+01	.34[illegible]E+01	.24[illegible]E+01	.3[illegible]E+01	[illegible]	.[illegible]E+01	.[illegible]E+00
10	.700000E+01	.33[illegible]E+01	.24[illegible]E+01	.3[illegible]E+01	[illegible]	.[illegible]E+01	.[illegible]E+00
11	.687500E+01	.33[illegible]E+01	.24[illegible]E+01	.3[illegible]E+01	[illegible]	.[illegible]E+01	.[illegible]E+00
12	.675000E+01	.33[illegible]E+01	.24[illegible]E+01	.3[illegible]E+01	[illegible]	.[illegible]E+01	.[illegible]E+00
13	.662500E+01	.32[illegible]E+01	.24[illegible]E+01	.3[illegible]E+01	[illegible]	.[illegible]E+01	.[illegible]E+00
14	.650000E+01	.32[illegible]E+01	.24[illegible]E+01	.3[illegible]E+01	[illegible]	.[illegible]E+01	.[illegible]E+00
15	.637500E+01	.32[illegible]E+01	.24[illegible]E+01	.3[illegible]E+01	[illegible]	.[illegible]E+01	.[illegible]E+00
16	.625000E+01	.31[illegible]E+01	.25[illegible]E+01	.3[illegible]E+01	[illegible]	.[illegible]E+01	.[illegible]E+00
17	.612500E+01	.31[illegible]E+01	.25[illegible]E+01	.3[illegible]E+01	[illegible]	.[illegible]E+01	.[illegible]E+00
18	.600000E+01	.31[illegible]E+01	.25[illegible]E+01	.3[illegible]E+01	[illegible]	.[illegible]E+01	.[illegible]E+00
19	.595000E+01	.31[illegible]E+01	.25[illegible]E+01	.3[illegible]E+01	[illegible]	.[illegible]E+01	.[illegible]E+00
20	.590000E+01	.30[illegible]E+01	.25[illegible]E+01	.3[illegible]E+01	[illegible]	.[illegible]E+01	.[illegible]E+00
21	.587500E+01	.30[illegible]E+01	.25[illegible]E+01	.3[illegible]E+01	[illegible]	.[illegible]E+01	.[illegible]E+00
22	.585000E+01	.30[illegible]E+01	.25[illegible]E+01	.3[illegible]E+01	[illegible]	.[illegible]E+01	.[illegible]E+00
23	.580000E+01	.30[illegible]E+01	.25[illegible]E+01	.3[illegible]E+01	[illegible]	.[illegible]E+01	.[illegible]E+00
24	.585000E+01	.30[illegible]E+01	.25[illegible]E+01	.3[illegible]E+01	[illegible]	.[illegible]E+01	.[illegible]E+00
25	.584000E+01	.30[illegible]E+01	.25[illegible]E+01	.3[illegible]E+01	[illegible]	.[illegible]E+01	.[illegible]E+00
26	.583000E+01	.30[illegible]E+01	.25[illegible]E+01	.3[illegible]E+01	[illegible]	.[illegible]E+01	.[illegible]E+00
27	.582000E+01	.30[illegible]E+01	.25[illegible]E+01	-.1[illegible]E+00	[illegible]	.[illegible]E+01	.[illegible]E+00
28	.579000E+01	.30[illegible]E+01	.25[illegible]E+01	0.	[illegible]	.[illegible]E+01	.[illegible]E+00
29	.580000E+01	.30[illegible]E+01	.25[illegible]E+01	.2[illegible]E+01	[illegible]	.[illegible]E+01	.[illegible]E+00
30	.580000E+01	.30[illegible]E+01	.25[illegible]E+01	.2[illegible]E+01	[illegible]	.[illegible]E+01	.[illegible]E+00
31	.581000E+01	.30[illegible]E+01	.25[illegible]E+01	.3[illegible]E+01	[illegible]	.[illegible]E+01	.[illegible]E+00
32	.583000E+01	.30[illegible]E+01	.25[illegible]E+01	.3[illegible]E+01	[illegible]	.[illegible]E+01	.[illegible]E+00
33	.589000E+01	.30[illegible]E+01	.25[illegible]E+01	.3[illegible]E+01	[illegible]	.[illegible]E+01	.[illegible]E+00
34	.585000E+01	.30[illegible]E+01	.25[illegible]E+01	.3[illegible]E+01	[illegible]	.[illegible]E+01	.[illegible]E+00
35	.587000E+01	.30[illegible]E+01	.25[illegible]E+01	.3[illegible]E+01	[illegible]	.[illegible]E+01	.[illegible]E+00
36	.596000E+01	.31[illegible]E+01	.25[illegible]E+01	.3[illegible]E+01	[illegible]	.[illegible]E+01	.[illegible]E+00
37	.600000E+01	.31[illegible]E+01	.26[illegible]E+01	.3[illegible]E+01	[illegible]	.[illegible]E+01	.[illegible]E+00
38	.614000E+01	.32[illegible]E+01	.26[illegible]E+01	.3[illegible]E+01	[illegible]	.[illegible]E+01	.[illegible]E+00
39	.650000E+01	.32[illegible]E+01	.26[illegible]E+01	.3[illegible]E+01	[illegible]	.[illegible]E+01	.[illegible]E+00
40	.660000E+01	.33[illegible]E+01	.25[illegible]E+01	.3[illegible]E+01	[illegible]	.[illegible]E+01	.[illegible]E+00
41	.680000E+01	.34[illegible]E+01	.25[illegible]E+01	.3[illegible]E+01	[illegible]	.[illegible]E+01	.[illegible]E+00
42	.710000E+01	.34[illegible]E+01	.25[illegible]E+01	.3[illegible]E+01	[illegible]	.[illegible]E+01	.[illegible]E+00
43	.725000E+01	.35[illegible]E+01	.25[illegible]E+01	.3[illegible]E+01	[illegible]	.[illegible]E+01	.[illegible]E+00
44	.800000E+01	.35[illegible]E+01	.25[illegible]E+01	.3[illegible]E+01	[illegible]	.[illegible]E+01	.[illegible]E+00
45	.900000E+01	.35[illegible]E+01	.25[illegible]E+01	.3[illegible]E+01	[illegible]	.[illegible]E+01	.[illegible]E+00
46	.100000E+02	.35[illegible]E+01	.25[illegible]E+01	.3[illegible]E+01	[illegible]	.[illegible]E+01	.[illegible]E+00

Microfilmed From
Best Available Copy

J,X,Y,(Q ,N=1,4), P/PSI AT Z = 22

1	.1[illegible]	[illegible]	[illegible]	[illegible]	P.	[illegible]	[illegible]
2	.1[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
3	.1[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
4	.1[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
5	.9[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
6	.8[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
7	.7[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
8	.7[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
9	.6[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
10	.6[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
11	.5[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
12	.5[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
13	.4[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
14	.4[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
15	.3[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
16	.3[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
17	.2[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
18	.2[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
19	.2[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
20	.2[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
21	.1[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
22	.1[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
23	.1[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
24	.1[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
25	.1[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
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28	.1[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
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30	.1[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
31	.1[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
32	.1[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
33	.1[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
34	.1[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
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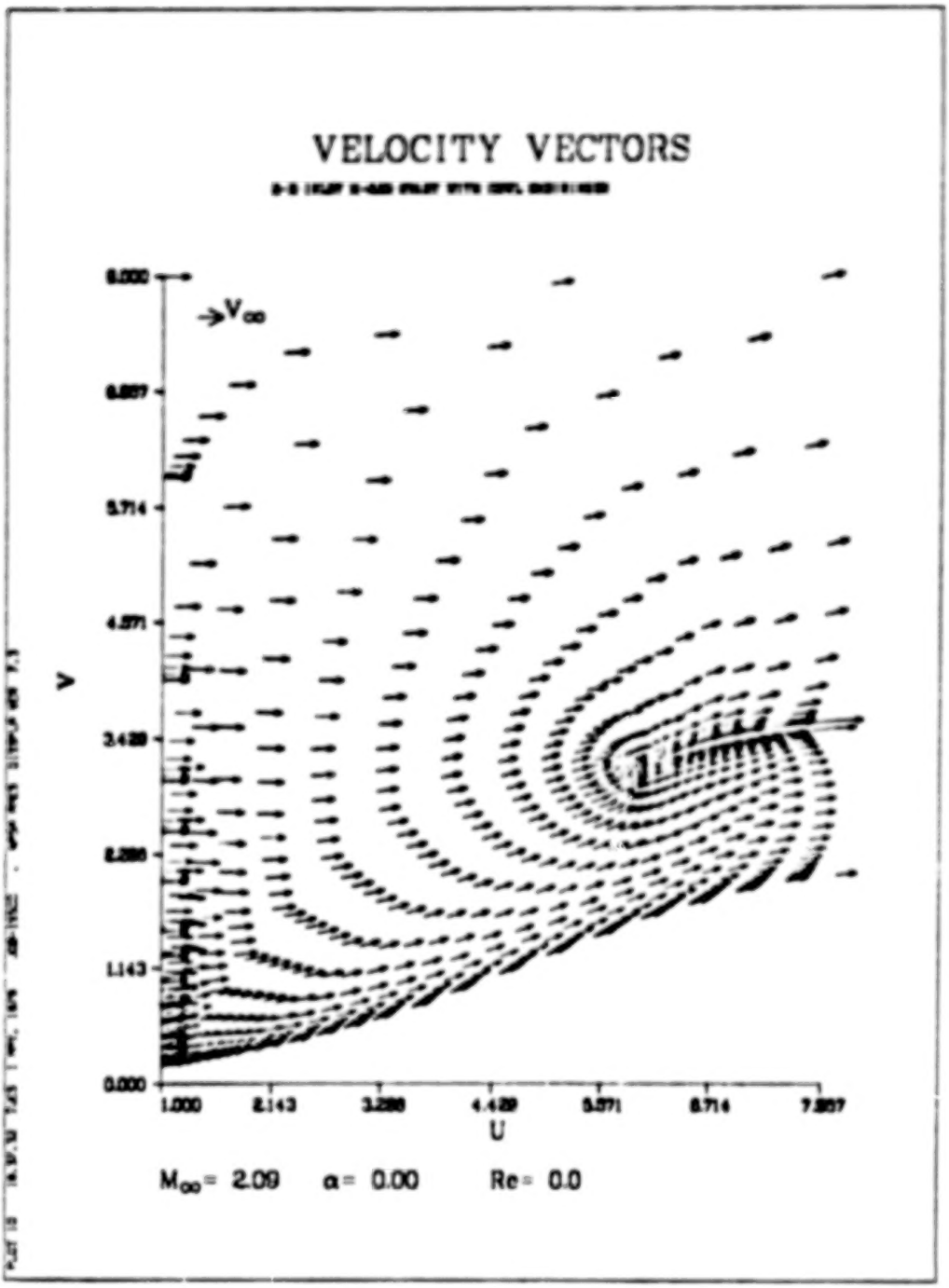
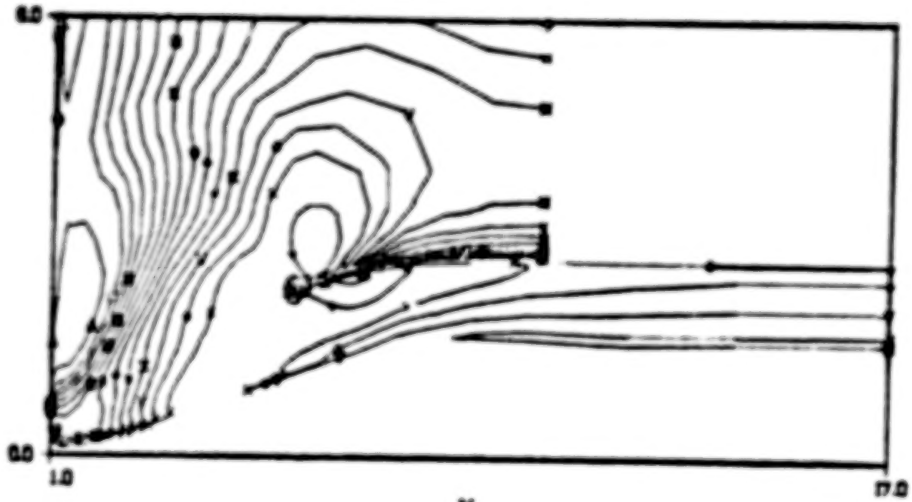
[illegible]

[illegible]

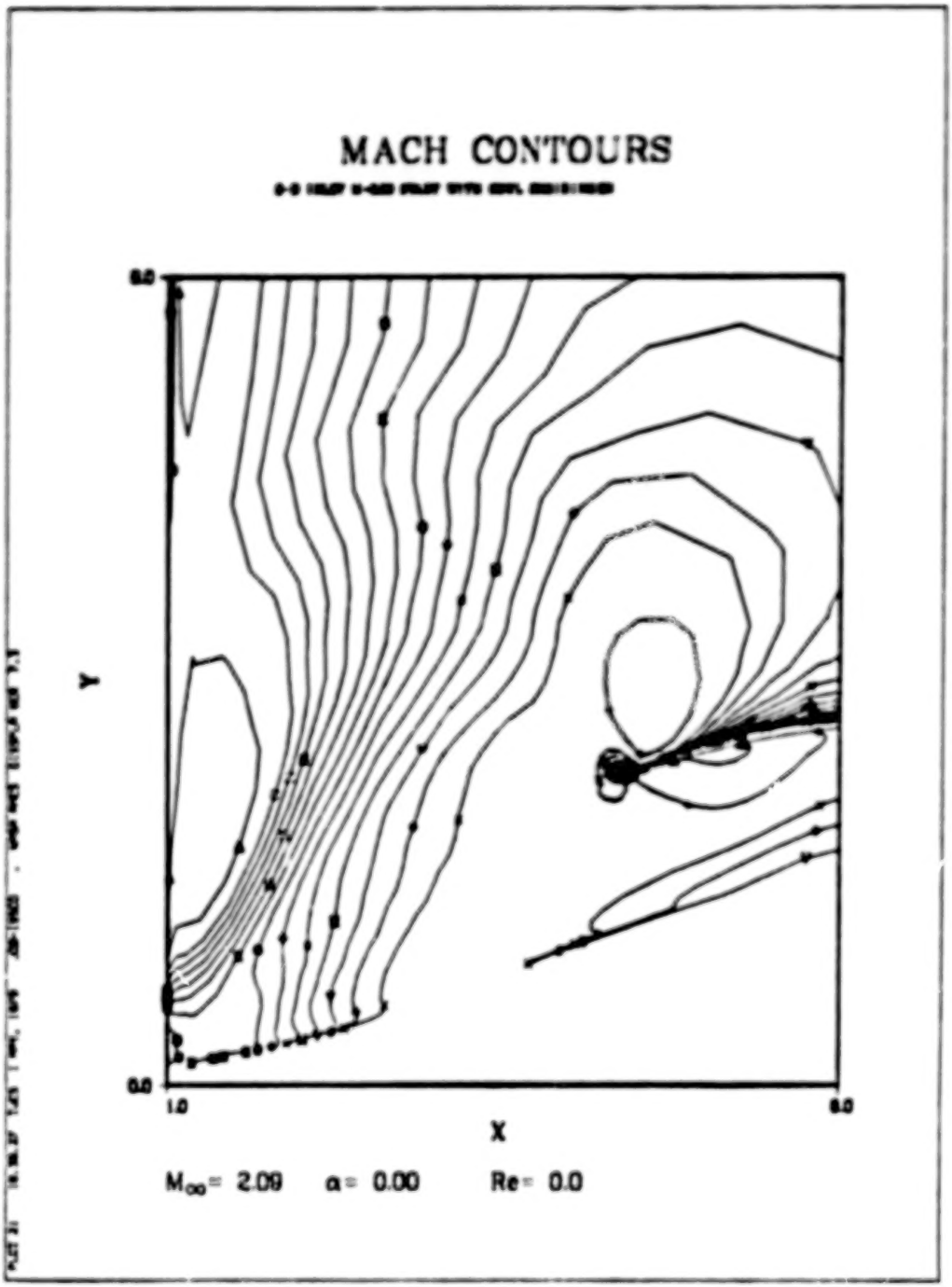
2.3 Contour Plots of Velocity, Mach Number, Density, and Pressure

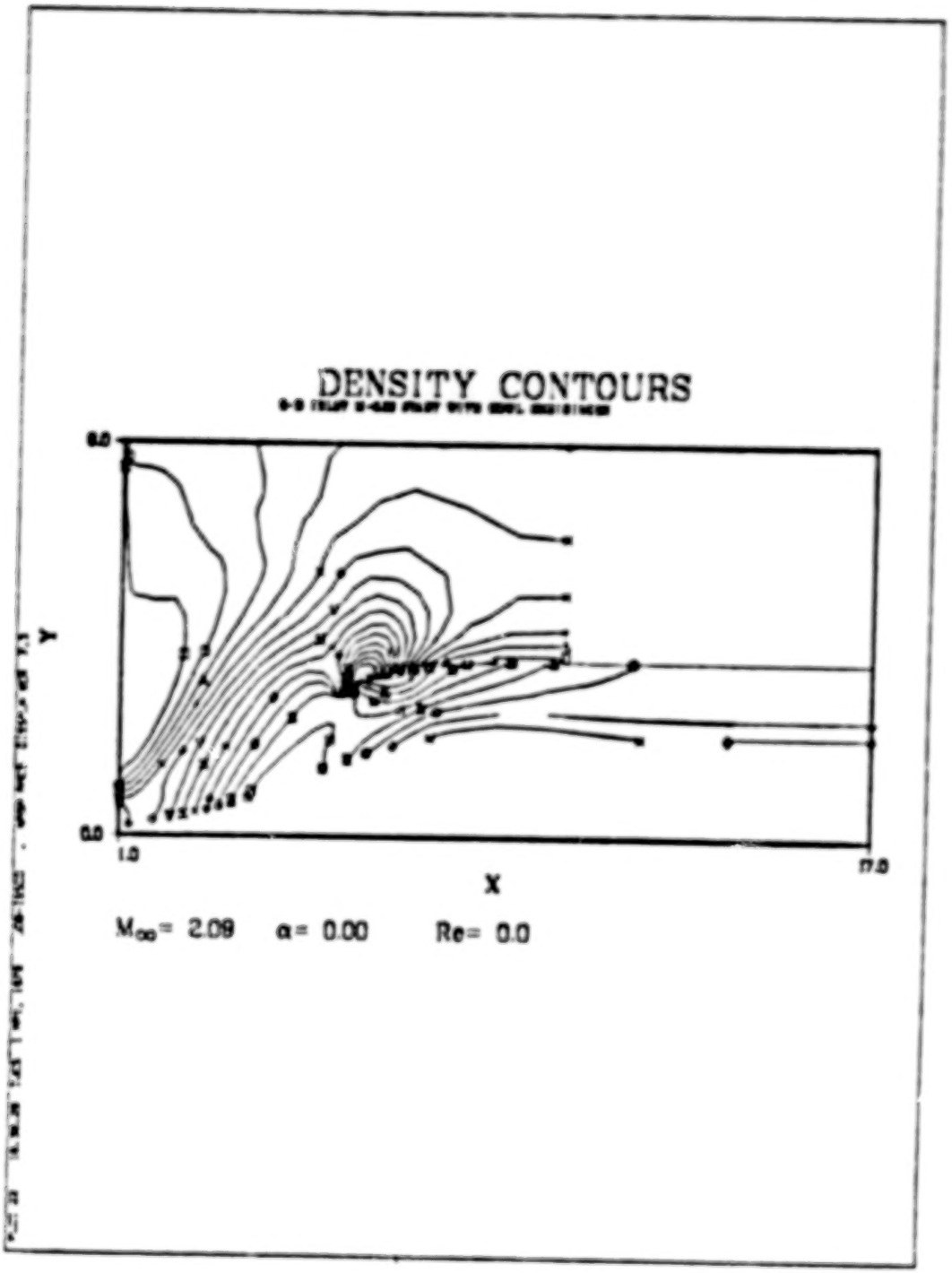


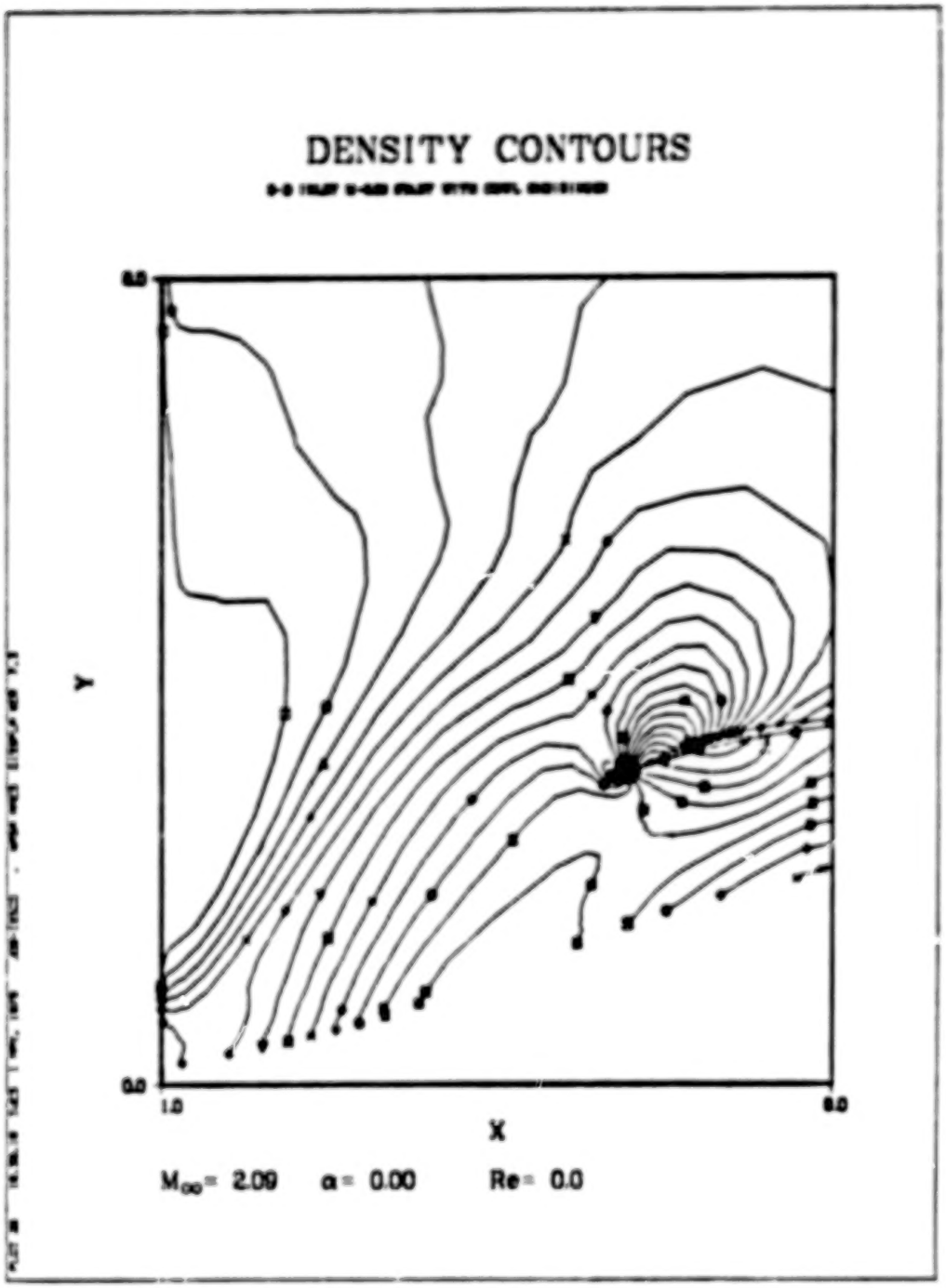
MACH CONTOURS

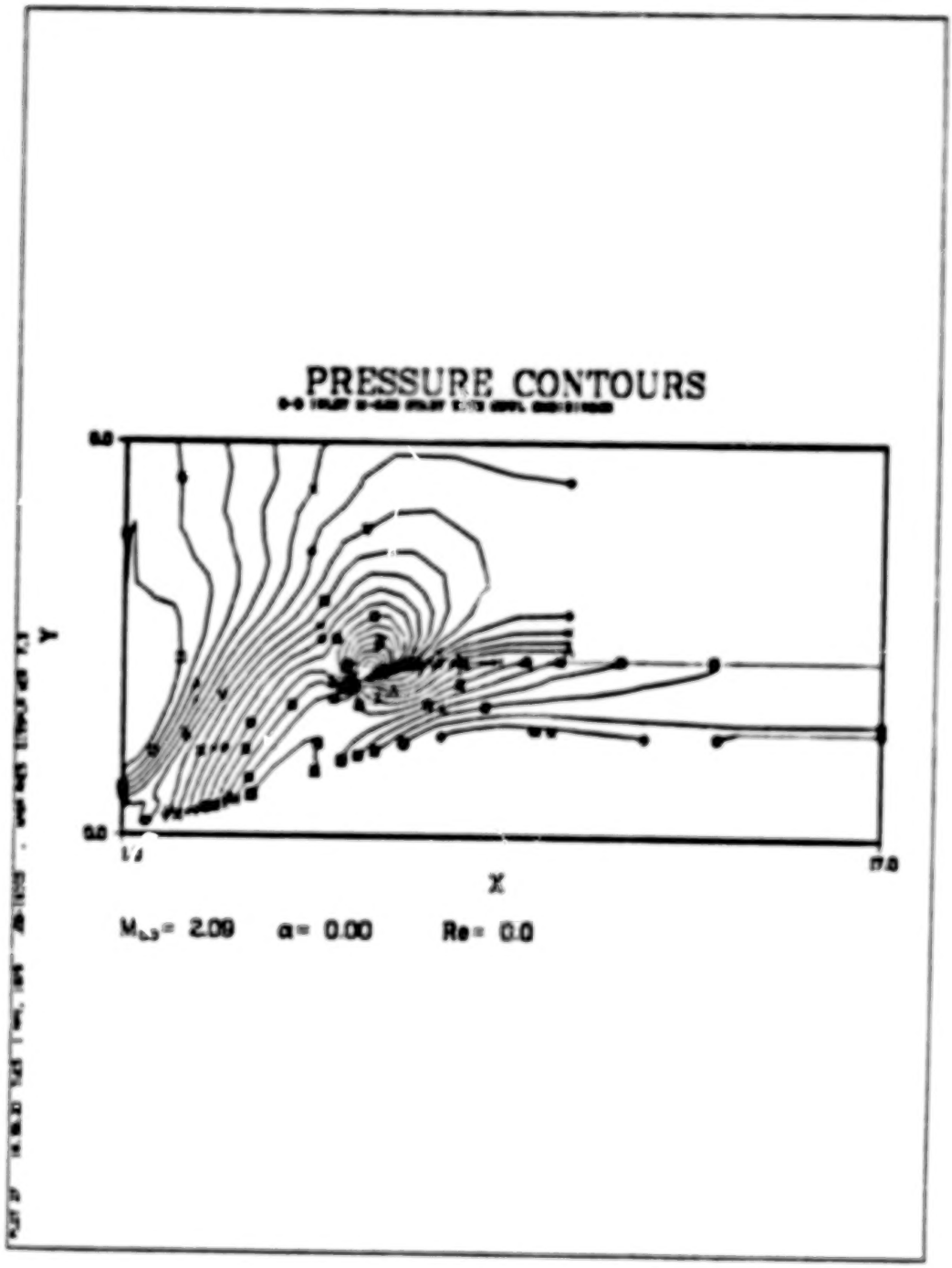


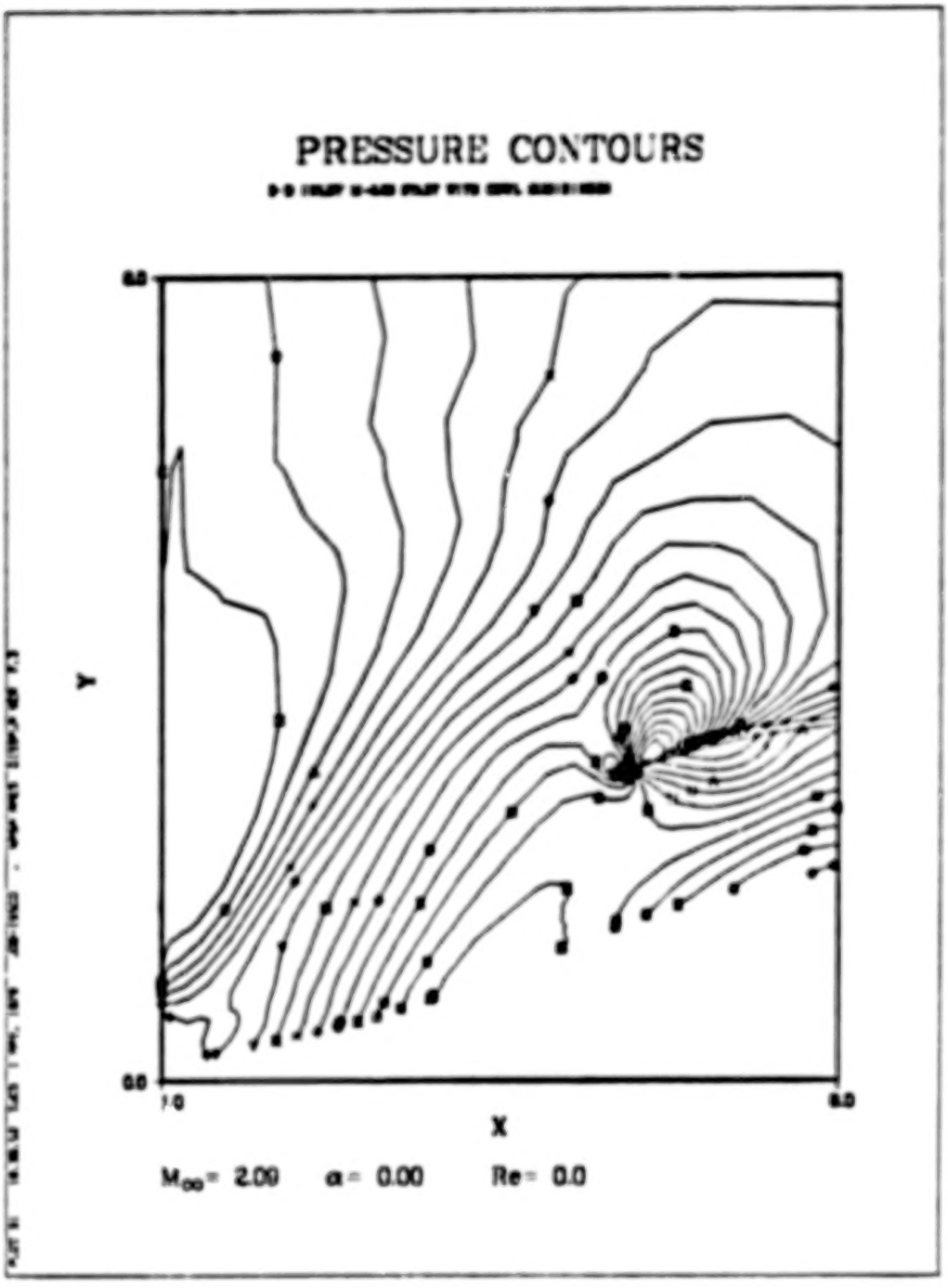
M_∞= 2.09 α= 0.00 Re= 0.0


MACH CONTOURS
0.0
Y
0.0
1.0
8.0
X
M∞= 2.09 α= 0.00 Re= 0.0


DENSITY CONTOURS
8.0
0.0
1.0
17.0
Y
X
M∞= 2.09 α= 0.00 Re= 0.0


DENSITY CONTOURS
Y
X
1.0
M_∞= 2.09 α= 0.00 Re= 0.0


PRESSURE CONTOURS
Y
X
M_{∞}= 2.09 α= 0.00 Re= 0.0


PRESSURE CONTOURS
Y
X
0.0
8.0
M_∞= 2.00 α= 0.00 Re= 0.0

3. THE MESH GENERATION CODE

In This section we present the input data, answer listings and plots for the inlet geometry shown in figure 1. The computational grid is generated as a 46×22 mesh.

3.1 Program Use and Operation

In this section we give a description of the input information required to run a typical test case, e.g., the calculation of a nonorthogonal grid for the drooped-cowl inlet. Various subroutines have been modified to accommodate a flexibility for input data for the present calculations.

Input data is read by PROGRAM.MAIN in the following order:

Card No.	Format	Variables	
1	3I5	JWAKE:	Number of grid points in the x-direction in the wake including the trailing edge point. Set to 1 for the present calculations.
		KMAX:	Number of grid points in the y-direction.
		MAXIT:	Number of iterations to be used in creating the unclustered grid.
2	8F10.0	XGMX:	x-direction coordinate of rearward boundary.
		XGMN:	x-direction coordinates of front boundary.
		YMAX:	y-direction coordinate of top boundary.
		YMIN:	y-direction coordinate of bottom boundary.
		XNOSE:	x-direction coordinate of leading edge of cowl.
		XTAIL:	x-direction coordinate of trailing edge of cowl.

Card No.	Format	Variables
		XRAMP: x-direction coordinate of leading edge of ramp.
3	F10.0	DX1: Minimum y-increment on rearward boundary for initial conditions.
4	4F10.0	XORG: Location on the x-axis of the special clustering origin.
		YORG: Location on the y-axis of the special clustering origin.
		ETAC: Angle (in degrees), about which angular clustering is done.
		BETA: Parameter determining the strength of angular clustering. For equal-angular distribution set to zero. Otherwise values in the range 1 to 5.
5	F10.0	OMEGA: Parameter for Thompson solver, values between 0 to 2 recommended.
6	F10.0	DY2: Minimum y-direction spacing for final clustering.
7	A71	Title on each SC4020 plot resulting from each run.
8	A80	Description of the cowl.
9 10 . . . 54	2F10.0	Cards 9, 10, ... - All cards following card 9 contain in columns 1 to 10 and 11 to 20 two floating-point numbers, x and y, respectively, which are coordinates of points on the cowl surface defining the airfoil shape. The points should be ordered counterclockwise.
55 . . . 82	2F10.0	Cards 55, 56, ... - Coordinates of the ramp, inflow boundary and outer boundary.

It should be noted that the number of points in the ξ-direction (along the body) is specified in PROGRAM.MAIN by assigning an integer value to the variable NBOD. We have further modified

SUB.OUTER such that it allows the boundary points along the ramp, inflow boundary and the outer boundary to be specified point by point. For each different geometry, these boundary points must be prescribed in SUB.OUTER.

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Sample Input for Test Case

```
     1    22 1000                                                                  CARD  1
17.          1.          10.          .14          5.792        17.          0.          2
0.02                                                                                    3
5.792        3.056        270.         0.                                            4
1.18                                                                                    5
0.02                                                                                    6
S.H. BIRINGEN       NEAR                                                                7
2-D INLET                                                                               8
17.          3.575                                                                      9
14.          3.575                                                                     10
12.          3.575                                                                     11
10.          3.575                                                                     12
9.           3.575                                                                     13
8.           3.5314                                                                    14
7.5          3.4704                                                                    15
```

```
7.25        3.4299                                                  CARD   16
7.125       3.4071                                                         17
7.          3.3826                                                         18
6.875       3.3564                                                         19
6.75        3.3284                                                         20
6.625       3.2987                                                         21
6.5         3.2672                                                         22
6.375       3.2339                                                         23
6.25        3.1988                                                         24
6.125       3.1619                                                         25
6.          3.1231                                                         26
5.95        3.1071                                                         27
5.9         3.0908                                                         28
5.872       3.0815                                                         29
5.858       3.0768                                                         30
5.844       3.0721                                                         31
5.82        3.0674                                                         32
```

5.816 3.0627 CARD 33

5.808 3.0599 34

5.8 3.0572 35

5.792 3.056 36

5.8 3.0595 37

5.808 3.0629 38

5.816 3.0663 39

5.83 3.0722 40

5.844 3.0782 41

5.858 3.0841 42

5.872 3.0901 43

5.96 3.1274 44

6.08 3.1699 45

6.16 3.2123 46

6.36 3.2972 47

6.6 3.38 48

6.9 3.43 49

.7.	3.48	CARD 50
7.5	3.56	51
8.	3.6	52
9.	3.65	53
10.42	3.65	54
1.	.177	55
1.1	.194	56
1.2	.2116	57
1.3	.2292	58
1.4	.2469	59
1.5	.2645	60
1.6	.2821	61
1.8	.319	62
2.	.3579	63
2.3	.4164	64
2.6	.4854	65
2.9	.5599	66

```
3.2         .6398                                                  CARD    67
3.6         .7624                                                          68
4.          .9029                                                          69
4.5         1.085                                                          70
5.          1.2669                                                         71
5.5         1.449                                                          72
6.          1.631                                                          73
6.5         1.775                                                          74
7.          1.905                                                          75
7.5         2.01                                                           76
8.          2.075                                                          77
9.          2.15                                                           78
10.         2.14                                                           79
12.         2.03                                                           80
14.         2.03                                                           81
17.         2.03                                                           82
```

PARAMETERS AS READ IN:

CARD NO. 1: JWAKE, NUMBER OF POINTS IN EACH SIDE OF WAKE = 1
AMAX, NUMBER OF POINTS IN THE [illegible] = 2
MAXIT, MAXIMUM NUMBER OF [illegible] = 1
CARD NO. 2: XGMX, X-DIRECTION [illegible] = 1
XGMI, X-DIRECTION [illegible] = 1
YMAX, Y-DIRECTION [illegible] =
YMIN, Y-DIRECTION [illegible] = .1
ANGLE, X-DIRECTION [illegible] = 5.7
XTAIL, X-DIRECTION [illegible] = 1.
X-COORDINATE LOCATION OF [illegible] =
CARD NO. 3: DTI, MINIMUM Y-INCREMENT [illegible] = .
CARD NO. 4: XCMG, X-DIRECTION [illegible] = 5.
YCMG, Y-DIRECTION [illegible] =
ETAC, [illegible] =
BETA, [illegible] =
CARD NO. 5: OMEGA, PARAMETER FOR [illegible] = 1.
CARD NO. 6: DT2, MINIMUM ETA-DIRECTION [illegible] = .
CARD NO. 8: PLOT TITLE: S.H. BIRKVEN NACA
CARD NO. 9: AIRFOIL DESCRIPTION: 2-D INLET

AIRFOIL POINTS AS READ IN.

N= 1	XB= .176[illegible]E+02	YB= .357[illegible]E+01
N= 2	XB= .140000E+02	YB= .357[illegible]E+01
N= 3	XB= .120000E+02	YB= .357[illegible]E+01
N= 4	XB= .100000E+02	YB= .357[illegible]E+01
N= 5	XB= .900000E+01	YB= .357[illegible]E+01
N= 6	XB= .800000E+01	YB= .353[illegible]E+01
N= 7	XB= .750000E+01	YB= .347[illegible]E+01
N= 8	XB= .725000E+01	YB= .34[illegible]E+01
N= 9	XB= .712500E+01	YB= .340[illegible]E+01
N= 10	XB= .700000E+01	YB= .33[illegible]E+01
N= 11	XB= .687500E+01	YB= .33[illegible]E+01
N= 12	XB= .675000E+01	YB= .33[illegible]E+01
N= 13	XB= .662500E+01	YB= .3[illegible]E+01
N= 14	XB= .650000E+01	YB= .3[illegible]E+01
N= 15	XB= .637500E+01	YB= .3[illegible]E+01
N= 16	XB= .625000E+01	YB= .31[illegible]E+01
N= 17	XB= .612500E+01	YB= .316[illegible]E+01
N= 18	XB= .600000E+01	YB= .31[illegible]E+01
N= 19	XB= .595000E+01	YB= .310[illegible]E+01
N= 20	XB= .590000E+01	YB= .30[illegible]E+01
N= 21	XB= .587500E+01	YB= .30[illegible]E+01
N= 22	XB= .585000E+01	YB= .30[illegible]E+01
N= 23	XB= .582500E+01	YB= .30[illegible]E+01
N= 24	XB= .580000E+01	YB= .30[illegible]E+01
N= 25	XB= .581000E+01	YB= .30[illegible]E+01
N= 26	XB= .582000E+01	YB= .30[illegible]E+01
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N= 28	XB= .584000E+01	YB= .30[illegible]E+01
N= 29	XB= .585000E+01	YB= .30[illegible]E+01
N= 30	XB= .586000E+01	YB= .30[illegible]E+01
N= 31	XB= .587000E+01	YB= .30[illegible]E+01
N= 32	XB= .588000E+01	YB= .30[illegible]E+01
N= 33	XB= .589000E+01	YB= .30[illegible]E+01
N= 34	XB= .589500E+01	YB= .30[illegible]E+01
N= 35	XB= .590000E+01	YB= .30[illegible]E+01
N= 36	XB= .595000E+01	YB= .31[illegible]E+01
N= 37	XB= .600000E+01	YB= .316[illegible]E+01
N= 38	XB= .612500E+01	YB= .32[illegible]E+01
N= 39	XB= .625000E+01	YB= .32[illegible]E+01
N= 40	XB= .637500E+01	YB= .33[illegible]E+01
N= 41	XB= .650000E+01	YB= .34[illegible]E+01
N= 42	XB= .700000E+01	YB= .35[illegible]E+01
N= 43	XB= .750000E+01	YB= .3[illegible]E+01
N= 44	XB= .800000E+01	YB= .3[illegible]E+01

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N= 45     XB=  .90007E+01     YB=  .3[illegible]E+01
N= 46     XB=  .10142E+02     YB=  .3[illegible]E+01

AIRFOIL POINTS AFTER RESCALING.
N=  1     XB=   17.00000     YB=    3.5[illegible]
N=  2     XB=   14.00000     YB=    3.5[illegible]
N=  3     XB=   12.00000     YB=    3.5[illegible]
N=  4     XB=   10.00000     YB=    3.5[illegible]
N=  5     XB=    9.00000     YB=    3.5[illegible]
N=  6     XB=    8.00000     YB=    3.55190
N=  7     XB=    7.50000     YB=    3.[illegible]
N=  8     XB=    7.25000     YB=    3.[illegible]
N=  9     XB=    7.12500     YB=    3.[illegible]
N= 10     XB=    7.00000     YB=    3.[illegible]
N= 11     XB=    6.87500     YB=    3.[illegible]
N= 12     XB=    6.75000     YB=    3.[illegible]
N= 13     XB=    6.62500     YB=    3.[illegible]
N= 14     XB=    6.50000     YB=    3.[illegible]
N= 15     XB=    6.37500     YB=    3.[illegible]
N= 16     XB=    6.25000     YB=    3.[illegible]
N= 17     XB=    6.12500     YB=    3.[illegible]
N= 18     XB=    6.00000     YB=    3.[illegible]
N= 19     XB=    5.95000     YB=    3.[illegible]
N= 20     XB=    5.90000     YB=    3.[illegible]
N= 21     XB=    5.87500     YB=    3.[illegible]
N= 22     XB=    5.85000     YB=    3.[illegible]
N= 23     XB=    5.84900     YB=    3.[illegible]
N= 24     XB=    5.85000     YB=    3.[illegible]
N= 25     XB=    5.81400     YB=    3.[illegible]
N= 26     XB=    5.86400     YB=    3.[illegible]
N= 27     XB=    5.80600     YB=    3.[illegible]
N= 28     XB=    5.79200     YB=    3.[illegible]
N= 29     XB=    5.80000     YB=    3.[illegible]
N= 30     XB=    5.80000     YB=    3.[illegible]
N= 31     XB=    5.81400     YB=    3.[illegible]
N= 32     XB=    5.83000     YB=    3.[illegible]
N= 33     XB=    5.84900     YB=    3.[illegible]
N= 34     XB=    5.85800     YB=    3.[illegible]
N= 35     XB=    5.87000     YB=    3.[illegible]
N= 36     XB=    5.96000     YB=    3.12740
N= 37     XB=    6.06000     YB=    3.16[illegible]
N= 38     XB=    6.16000     YB=    3.[illegible]
N= 39     XB=    6.34400     YB=    3.[illegible]
N= 40     XB=    6.46000     YB=    3.[illegible]
N= 41     XB=    6.80000     YB=    3.[illegible]
N= 42     XB=    7.00000     YB=    3.[illegible]
N= 43     XB=    7.50000     YB=    3.[illegible]
N= 44     XB=    8.00000     YB=    3.[illegible]
N= 45     XB=    9.00000     YB=    3.[illegible]
N= 46     XB=   10.42600     YB=    3.[illegible]

BOUNDARY ON LANE AND AIRFOIL:
X(  1,  1)=    17.60000     Y(  1,  1)=    3.57[illegible]
X(  2,  1)=    14.00000     Y(  2,  1)=    3.57[illegible]
X(  3,  1)=    12.00000     Y(  3,  1)=    3.57[illegible]
X(  4,  1)=    10.00000     Y(  4,  1)=    3.57[illegible]
X(  5,  1)=     9.00000     Y(  5,  1)=    3.57[illegible]
X(  6,  1)=     8.00000     Y(  6,  1)=    3.55[illegible]
X(  7,  1)=     7.50000     Y(  7,  1)=    3.[illegible]
X(  8,  1)=     7.25000     Y(  8,  1)=    3.[illegible]
X(  9,  1)=     7.12500     Y(  9,  1)=    3.[illegible]
X( 10,  1)=     7.00000     Y( 10,  1)=    3.[illegible]
X( 11,  1)=     6.87500     Y( 11,  1)=    3.[illegible]
X( 12,  1)=     6.75000     Y( 12,  1)=    3.[illegible]
X( 13,  1)=     6.62500     Y( 13,  1)=    3.[illegible]
X( 14,  1)=     6.50000     Y( 14,  1)=    3.[illegible]
X( 15,  1)=     6.37500     Y( 15,  1)=    3.[illegible]
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X(16, 1)=	6.25000	Y(16, 1)=	3.19[illegible]
X(17, 1)=	6.12500	Y(17, 1)=	3.14[illegible]
X(18, 1)=	6.00000	Y(18, 1)=	3.[illegible]
X(19, 1)=	5.95000	Y(19, 1)=	3.[illegible]
X(20, 1)=	5.90000	Y(20, 1)=	3.[illegible]
X(21, 1)=	5.87500	Y(21, 1)=	3.[illegible]
X(22, 1)=	5.85000	Y(22, 1)=	3.[illegible]
X(23, 1)=	5.84000	Y(23, 1)=	3.[illegible]
X(24, 1)=	5.83000	Y(24, 1)=	3.[illegible]
X(25, 1)=	5.81600	Y(25, 1)=	3.[illegible]
X(26, 1)=	5.80000	Y(26, 1)=	3.[illegible]
X(27, 1)=	5.80000	Y(27, 1)=	3.[illegible]
X(28, 1)=	5.79200	Y(28, 1)=	3.[illegible]
X(29, 1)=	5.80000	Y(29, 1)=	3.[illegible]
X(30, 1)=	5.80000	Y(30, 1)=	3.[illegible]
X(31, 1)=	5.81400	Y(31, 1)=	3.[illegible]
X(32, 1)=	5.83000	Y(32, 1)=	3.[illegible]
X(33, 1)=	5.84000	Y(33, 1)=	3.[illegible]
X(34, 1)=	5.85800	Y(34, 1)=	3.[illegible]
X(35, 1)=	5.87200	Y(35, 1)=	3.[illegible]
X(36, 1)=	5.94000	Y(36, 1)=	3.[illegible]
X(37, 1)=	6.04000	Y(37, 1)=	3.[illegible]
X(38, 1)=	6.14000	Y(38, 1)=	3.[illegible]
X(39, 1)=	6.34000	Y(39, 1)=	3.[illegible]
X(40, 1)=	6.40000	Y(40, 1)=	3.[illegible]
X(41, 1)=	6.50000	Y(41, 1)=	3.[illegible]
X(42, 1)=	7.00000	Y(42, 1)=	3.[illegible]
X(43, 1)=	7.50000	Y(43, 1)=	3.[illegible]
X(44, 1)=	8.00000	Y(44, 1)=	3.[illegible]
X(45, 1)=	9.00000	Y(45, 1)=	3.[illegible]
X(46, 1)=	10.40000	Y(46, 1)=	3.[illegible]

EPSIL= 1.00954 AND F= .00000 AT 5 ITERATIONS.

EPSIL= 1.00197 AND F= .00000 AT 5 ITERATIONS.

LOWER PART OF REARWARD BOUNDARY:

X(1, 1)=	17.00000	Y(1, 1)=	3.[illegible]
X(1, 2)=	17.66663	Y(1, 2)=	3.[illegible]
X(1, 3)=	17.00000	Y(1, 3)=	3.[illegible]
X(1, 4)=	17.00000	Y(1, 4)=	3.[illegible]
X(1, 5)=	17.00000	Y(1, 5)=	3.[illegible]
X(1, 6)=	17.00000	Y(1, 6)=	3.[illegible]
X(1, 7)=	17.00000	Y(1, 7)=	3.[illegible]
X(1, 8)=	17.00000	Y(1, 8)=	3.[illegible]
X(1, 9)=	17.00000	Y(1, 9)=	3.[illegible]
X(1, 10)=	17.00000	Y(1, 10)=	3.[illegible]
X(1, 11)=	17.00000	Y(1, 11)=	2.92176
X(1, 12)=	17.00000	Y(1, 12)=	2.[illegible]
X(1, 13)=	17.00000	Y(1, 13)=	2.[illegible]
X(1, 14)=	17.00000	Y(1, 14)=	2.[illegible]
X(1, 15)=	17.00000	Y(1, 15)=	2.[illegible]
X(1, 16)=	17.00000	Y(1, 16)=	2.[illegible]
X(1, 17)=	17.00000	Y(1, 17)=	2.[illegible]
X(1, 18)=	17.00000	Y(1, 18)=	2.[illegible]
X(1, 19)=	17.00000	Y(1, 19)=	2.[illegible]
X(1, 20)=	17.00000	Y(1, 20)=	2.[illegible]
X(1, 21)=	17.00000	Y(1, 21)=	2.[illegible]
X(1, 22)=	17.00000	Y(1, 22)=	2.[illegible]

LOWER PART OF REARWARD BOUNDARY:

X(46, 1)=	10.40000	Y(46, 1)=	3.[illegible]
X(46, 2)=	10.42000	Y(46, 2)=	3.[illegible]
X(46, 3)=	10.42000	Y(46, 3)=	3.[illegible]
X(46, 4)=	10.42000	Y(46, 4)=	3.[illegible]
X(46, 5)=	10.42000	Y(46, 5)=	3.[illegible]
X(46, 6)=	10.42000	Y(46, 6)=	3.[illegible]

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X( 46,  7)=    10.42000     Y( 46,  7)=    4.20000
X( 46,  8)=    10.42000     Y( 46,  8)=    4.54000
X( 46,  9)=    10.42000     Y( 46,  9)=    5.00000
X( 46, 10)=    10.42000     Y( 46, 10)=    5.62000
X( 46, 11)=    10.42000     Y( 46, 11)=    6.41000
X( 46, 12)=    10.42000     Y( 46, 12)=    7.25000
X( 46, 13)=    10.42000     Y( 46, 13)=    7.99000
X( 46, 14)=    10.42000     Y( 46, 14)=    8.60000
X( 46, 15)=    10.42000     Y( 46, 15)=    9.10000
X( 46, 16)=    10.42000     Y( 46, 16)=    9.49000
X( 46, 17)=    10.42000     Y( 46, 17)=    9.80000
X( 46, 18)=    10.42000     Y( 46, 18)=    9.90000
X( 46, 19)=    10.42000     Y( 46, 19)=    9.90000
X( 46, 20)=    10.42000     Y( 46, 20)=    9.90000
X( 46, 21)=    10.42000     Y( 46, 21)=    9.90000
X( 46, 22)=    10.42000     Y( 46, 22)=    10.00000

CLUSTR=F     ETARU=   50.32     ETARL=   10.39     ANG1=  124.01     ANG2=  211.32     XORGIN= 5.79200     YORGIN= 3.06600
    ANG3=      -I     ANG4=      -1     ANG5=      -I

OUTER BOUNDARY ON TOP, FRONT, AND BOTTOM:
X( 45, 22)=     8.00000     Y( 45, 22)=    10.00000     ETA=   64.07     PHI=   64.07     NSIDE=1
X( 44, 22)=     5.00000     Y( 44, 22)=    10.00000     ETA=   71.81     PHI=   71.81     NSIDE=1
X( 43, 22)=     2.50000     Y( 43, 22)=    10.00000     ETA=   79.56     PHI=   79.56     NSIDE=1
X( 42, 22)=     1.00000     Y( 42, 22)=     8.00000     ETA=   87.31     PHI=   87.31     NSIDE=2
X( 41, 22)=     1.00000     Y( 41, 22)=     6.00000     ETA=   95.06     PHI=   95.06     NSIDE=2
X( 40, 22)=     1.00000     Y( 40, 22)=     4.00000     ETA=  102.80     PHI=  102.80     NSIDE=2
X( 39, 22)=     1.00000     Y( 39, 22)=     3.00000     ETA=  110.55     PHI=  110.55     NSIDE=2
X( 38, 22)=     1.00000     Y( 38, 22)=     2.50000     ETA=  118.30     PHI=  118.30     NSIDE=2
X( 37, 22)=     1.00000     Y( 37, 22)=     2.00000     ETA=  126.05     PHI=  126.05     NSIDE=2
X( 36, 22)=     1.00000     Y( 36, 22)=     1.50000     ETA=  133.79     PHI=  133.79     NSIDE=2
X( 35, 22)=     1.00000     Y( 35, 22)=     1.25000     ETA=  141.54     PHI=  141.54     NSIDE=2
X( 34, 22)=     1.00000     Y( 34, 22)=     1.00000     ETA=  149.29     PHI=  149.29     NSIDE=2
X( 33, 22)=     1.00000     Y( 33, 22)=      .75000     ETA=  157.04     PHI=  157.04     NSIDE=2
X( 32, 22)=     1.00000     Y( 32, 22)=      .60000     ETA=  164.78     PHI=  164.78     NSIDE=2
X( 31, 22)=     1.00000     Y( 31, 22)=      .45000     ETA=  172.53     PHI=  172.53     NSIDE=2
X( 30, 22)=     1.00000     Y( 30, 22)=      .35000     ETA=  180.28     PHI=  180.28     NSIDE=2
X( 29, 22)=     1.00000     Y( 29, 22)=      .25000     ETA=  188.03     PHI=  188.03     NSIDE=2
X( 28, 22)=     1.00000     Y( 28, 22)=      .17700     ETA=  195.77     PHI=  195.77     NSIDE=4
X( 27, 22)=     1.10000     Y( 27, 22)=      .19400     ETA=  203.52     PHI=  203.52     NSIDE=4
X( 26, 22)=     1.20000     Y( 26, 22)=      .21160     ETA=  211.27     PHI=  211.27     NSIDE=4
X( 25, 22)=     1.30000     Y( 25, 22)=      .23000     ETA=  219.02     PHI=  219.02     NSIDE=4
X( 24, 22)=     1.40000     Y( 24, 22)=      .24690     ETA=  226.76     PHI=  226.76     NSIDE=4
X( 23, 22)=     1.50000     Y( 23, 22)=      .26450     ETA=  234.51     PHI=  234.51     NSIDE=4
X( 22, 22)=     1.60000     Y( 22, 22)=      .28210     ETA=  242.26     PHI=  242.26     NSIDE=4
X( 21, 22)=     1.80000     Y( 21, 22)=      .31900     ETA=  250.01     PHI=  250.01     NSIDE=4
X( 20, 22)=     2.00000     Y( 20, 22)=      .35750     ETA=  257.75     PHI=  257.75     NSIDE=4
X( 19, 22)=     2.30000     Y( 19, 22)=      .41640     ETA=  265.50     PHI=  265.50     NSIDE=4
X( 18, 22)=     2.60000     Y( 18, 22)=      .48590     ETA=  273.25     PHI=  273.25     NSIDE=4
X( 17, 22)=     2.90000     Y( 17, 22)=      .55980     ETA=  281.00     PHI=  281.00     NSIDE=4
X( 16, 22)=     3.20000     Y( 16, 22)=      .63980     ETA=  288.74     PHI=  288.74     NSIDE=4
X( 15, 22)=     3.60000     Y( 15, 22)=      .76240     ETA=  296.49     PHI=  296.49     NSIDE=4
X( 14, 22)=     4.00000     Y( 14, 22)=      .90250     ETA=  304.24     PHI=  304.24     NSIDE=4
X( 13, 22)=     4.50000     Y( 13, 22)=     1.08100     ETA=  311.99     PHI=  311.99     NSIDE=4
X( 12, 22)=     5.00000     Y( 12, 22)=     1.26690     ETA=  319.73     PHI=  319.73     NSIDE=4
X( 11, 22)=     5.50000     Y( 11, 22)=     1.44900     ETA=  327.48     PHI=  327.48     NSIDE=4
X( 10, 22)=     6.00000     Y( 10, 22)=     1.63100     ETA=  335.23     PHI=  335.23     NSIDE=4
X(  9, 22)=     6.50000     Y(  9, 22)=     1.77500     ETA=  342.98     PHI=  342.98     NSIDE=4
X(  8, 22)=     7.00000     Y(  8, 22)=     1.90000     ETA=  350.72     PHI=  350.72     NSIDE=4
X(  7, 22)=     7.50000     Y(  7, 22)=     2.01000     ETA=  358.47     PHI=  358.47     NSIDE=4
X(  6, 22)=     8.00000     Y(  6, 22)=     2.07000     ETA=  366.22     PHI=  366.22     NSIDE=4
X(  5, 22)=     9.00000     Y(  5, 22)=     2.15000     ETA=  373.97     PHI=  373.97     NSIDE=4
X(  4, 22)=    10.00000     Y(  4, 22)=     2.19000     ETA=  381.71     PHI=  381.71     NSIDE=4
X(  3, 22)=    12.00000     Y(  3, 22)=     2.05000     ETA=  389.46     PHI=  389.46     NSIDE=4
X(  2, 22)=    14.00000     Y(  2, 22)=     2.05000     ETA=  397.21     PHI=  397.21     NSIDE=4
X(  1, 22)=    17.00000     Y(  1, 22)=     2.05000     ETA=  404.96     PHI=  404.96     NSIDE=4
SUM OF RESIDUALS =      747.77225[illegible] IN ITERATION
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SUM OF RESIDUALS = 95.6[illegible] AFTER 2 ITERATIONS
SUM OF RESIDUALS = 66.0[illegible] AFTER 3 ITERATIONS
SUM OF RESIDUALS = 53.16[illegible] AFTER 4 ITERATIONS
SUM OF RESIDUALS = 45.5[illegible] AFTER 5 ITERATIONS
SUM OF RESIDUALS = 41.11[illegible] AFTER 6 ITERATIONS
SUM OF RESIDUALS = 37.5[illegible] AFTER 7 ITERATIONS
SUM OF RESIDUALS = 34.6[illegible] AFTER 8 ITERATIONS
SUM OF RESIDUALS = 32.18[illegible] AFTER 9 ITERATIONS
SUM OF RESIDUALS = 29.97[illegible] AFTER 10 ITERATIONS
SUM OF RESIDUALS = 27.98[illegible] AFTER 11 ITERATIONS
SUM OF RESIDUALS = 26.1[illegible] AFTER 12 ITERATIONS
SUM OF RESIDUALS = 24.5[illegible] AFTER 13 ITERATIONS
SUM OF RESIDUALS = 23.01[illegible] AFTER 14 ITERATIONS
SUM OF RESIDUALS = 21.6[illegible] AFTER 15 ITERATIONS
SUM OF RESIDUALS = 20.3[illegible] AFTER 16 ITERATIONS
SUM OF RESIDUALS = 19.15[illegible] AFTER 17 ITERATIONS
SUM OF RESIDUALS = 18.05[illegible] AFTER 18 ITERATIONS
SUM OF RESIDUALS = 17.0[illegible] AFTER 19 ITERATIONS
SUM OF RESIDUALS = 16.09[illegible] AFTER 20 ITERATIONS
SUM OF RESIDUALS = 15.21[illegible] AFTER 21 ITERATIONS
SUM OF RESIDUALS = 14.3[illegible] AFTER 22 ITERATIONS
SUM OF RESIDUALS = 13.6[illegible] AFTER 23 ITERATIONS
SUM OF RESIDUALS = 12.9[illegible] AFTER 24 ITERATIONS
SUM OF RESIDUALS = 12.2[illegible] AFTER 25 ITERATIONS
SUM OF RESIDUALS = 11.6[illegible] AFTER 26 ITERATIONS
SUM OF RESIDUALS = 11.0[illegible] AFTER 27 ITERATIONS
SUM OF RESIDUALS = 10.4[illegible] AFTER 28 ITERATIONS
SUM OF RESIDUALS = 9.9[illegible] AFTER 29 ITERATIONS
SUM OF RESIDUALS = 9.4[illegible] AFTER 30 ITERATIONS
SUM OF RESIDUALS = 9.01[illegible] AFTER 31 ITERATIONS
SUM OF RESIDUALS = 8.5[illegible] AFTER 32 ITERATIONS
SUM OF RESIDUALS = 8.1[illegible] AFTER 33 ITERATIONS
SUM OF RESIDUALS = 7.7[illegible] AFTER 34 ITERATIONS
SUM OF RESIDUALS = [illegible] AFTER 35 ITERATIONS
SUM OF RESIDUALS = 7.0[illegible] AFTER 36 ITERATIONS
SUM OF RESIDUALS = 6.7[illegible] AFTER 37 ITERATIONS
SUM OF RESIDUALS = 6.4[illegible] AFTER 38 ITERATIONS
SUM OF RESIDUALS = 6.15[illegible] AFTER 39 ITERATIONS
SUM OF RESIDUALS = 5.8[illegible] AFTER 40 ITERATIONS
SUM OF RESIDUALS = 5.6[illegible] AFTER 41 ITERATIONS
SUM OF RESIDUALS = 5.3[illegible] AFTER 42 ITERATIONS
SUM OF RESIDUALS = 5.1[illegible] AFTER 43 ITERATIONS
SUM OF RESIDUALS = 4.91[illegible] AFTER 44 ITERATIONS
SUM OF RESIDUALS = 4.7[illegible] AFTER 45 ITERATIONS
SUM OF RESIDUALS = 4.4[illegible] AFTER 46 ITERATIONS
SUM OF RESIDUALS = 4.3[illegible] AFTER 47 ITERATIONS
SUM OF RESIDUALS = 4.1[illegible] AFTER 48 ITERATIONS
SUM OF RESIDUALS = 3.9[illegible] AFTER 49 ITERATIONS
SUM OF RESIDUALS = 3.7[illegible] AFTER 50 ITERATIONS
SUM OF RESIDUALS = 3.6[illegible] AFTER 51 ITERATIONS
SUM OF RESIDUALS = 3.4[illegible] AFTER 52 ITERATIONS
SUM OF RESIDUALS = 3.3[illegible] AFTER 53 ITERATIONS
SUM OF RESIDUALS = 3.19[illegible] AFTER 54 ITERATIONS
SUM OF RESIDUALS = 3.0[illegible] AFTER 55 ITERATIONS
SUM OF RESIDUALS = 2.9[illegible] AFTER 56 ITERATIONS
SUM OF RESIDUALS = 2.8[illegible] AFTER 57 ITERATIONS
SUM OF RESIDUALS = 2.7[illegible] AFTER 58 ITERATIONS
SUM OF RESIDUALS = 2.5[illegible] AFTER 59 ITERATIONS
SUM OF RESIDUALS = 2.4[illegible] AFTER 60 ITERATIONS
SUM OF RESIDUALS = 2.3[illegible] AFTER 61 ITERATIONS
SUM OF RESIDUALS = 2.2[illegible] AFTER 62 ITERATIONS
SUM OF RESIDUALS = 2.1[illegible] AFTER 63 ITERATIONS
SUM OF RESIDUALS = 2.11[illegible] AFTER 64 ITERATIONS
SUM OF RESIDUALS = 2.0[illegible] AFTER 65 ITERATIONS
SUM OF RESIDUALS = 1.9[illegible] AFTER 66 ITERATIONS
SUM OF RESIDUALS = 1.87[illegible] AFTER 67 ITERATIONS
SUM OF RESIDUALS = 1.7[illegible] AFTER 68 ITERATIONS
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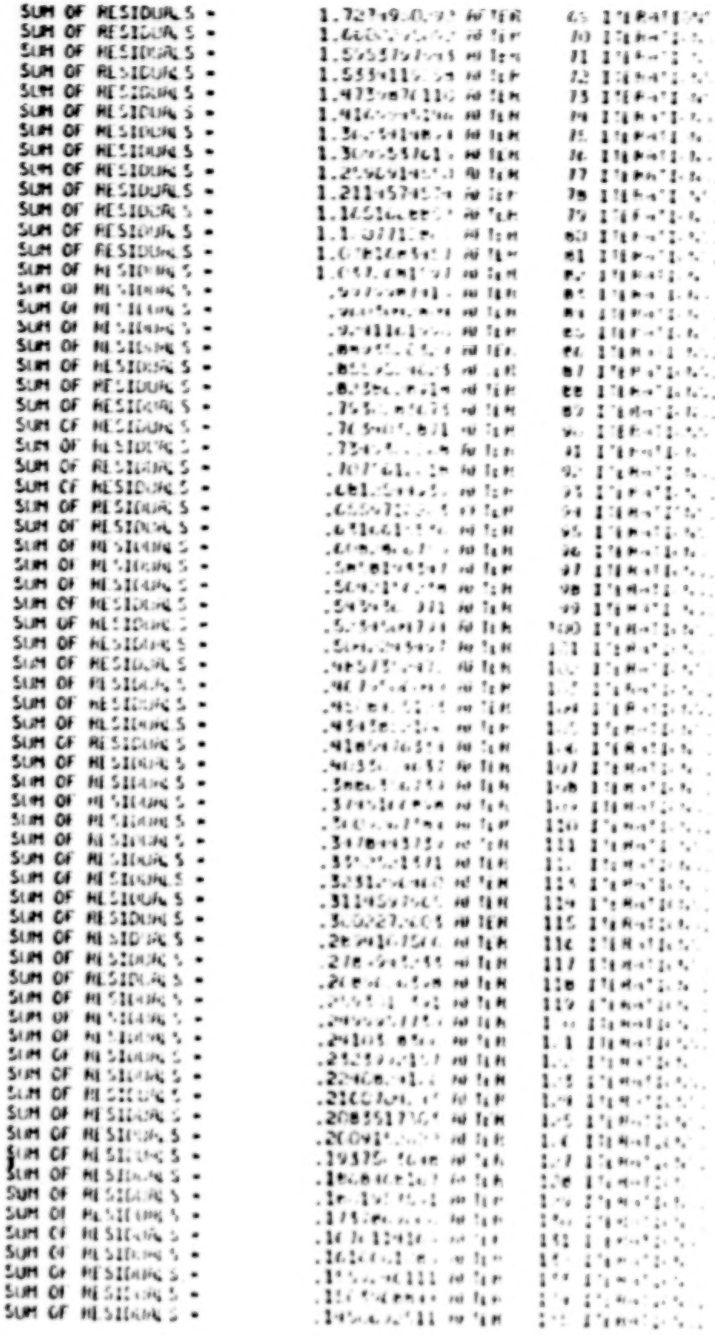

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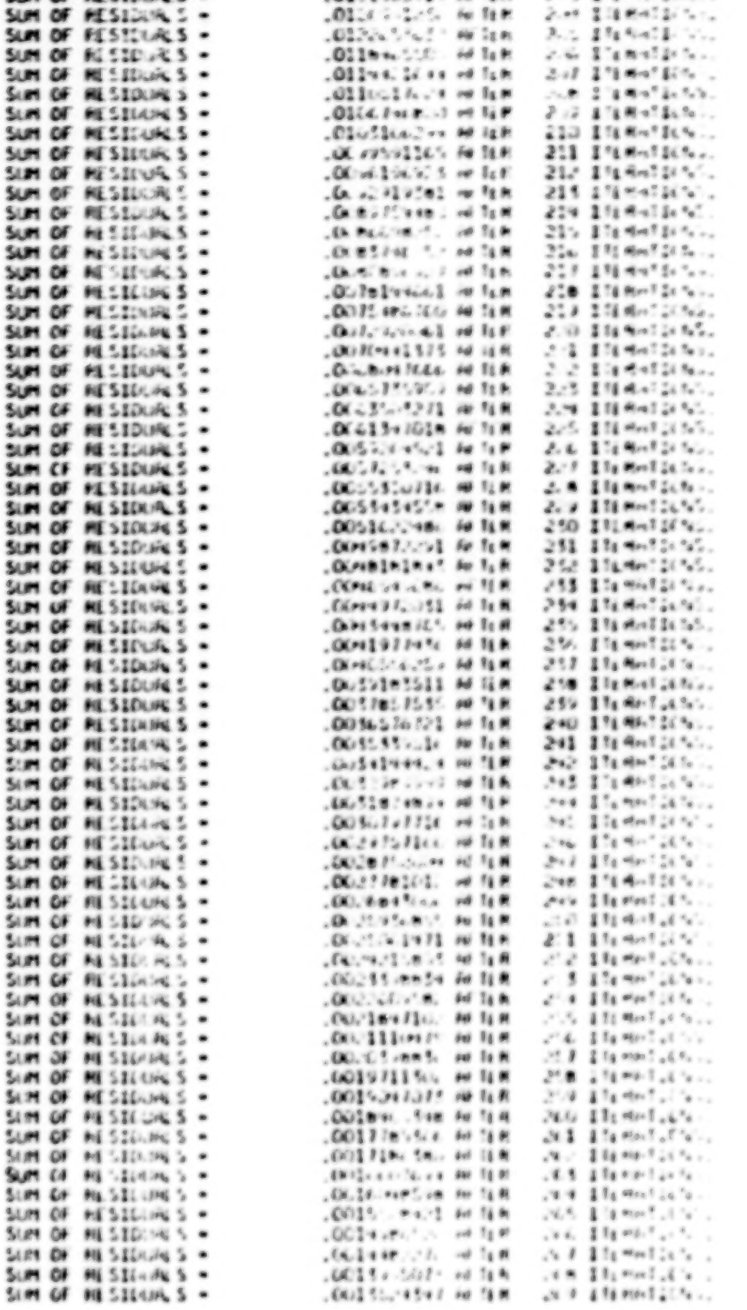
SUM OF RESIDUALS =



SUM OF RESIDUALS = .0001506953 AFTER 270 ITERATIONS.
SUM OF RESIDUALS = [illegible] AFTER 271 ITERATIONS.
SUM OF RESIDUALS = [illegible] AFTER 272 ITERATIONS.
SUM OF RESIDUALS = [illegible] AFTER 273 ITERATIONS.
SUM OF RESIDUALS = [illegible] AFTER 274 ITERATIONS.
SUM OF RESIDUALS = [illegible] AFTER 275 ITERATIONS.
SUM OF RESIDUALS = [illegible] AFTER 276 ITERATIONS.
SUM OF RESIDUALS = [illegible] AFTER 277 ITERATIONS.
SUM OF RESIDUALS = [illegible] AFTER 278 ITERATIONS.
SUM OF RESIDUALS = [illegible] AFTER 279 ITERATIONS.
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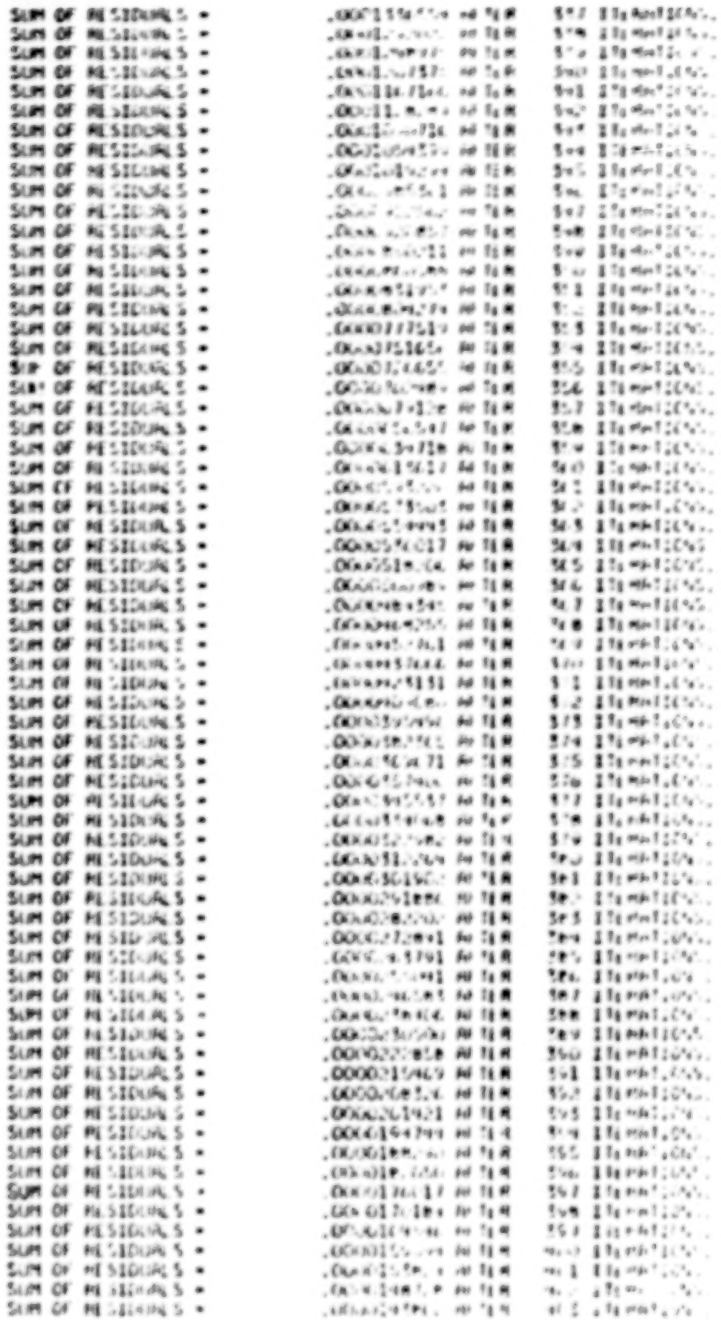

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SUM OF RESIDUALS =	.000000001B	AFTER	731 ITERATIONS.
SUM OF RESIDUALS =	.000000001B	AFTER	732 ITERATIONS.
SUM OF RESIDUALS =	.000000001B	AFTER	733 ITERATIONS.
SUM OF RESIDUALS =	.000000001B	AFTER	734 ITERATIONS.
SUM OF RESIDUALS =	.000000001B	AFTER	735 ITERATIONS.
SUM OF RESIDUALS =	.000000001B	AFTER	736 ITERATIONS.
SUM OF RESIDUALS =	.000000001B	AFTER	737 ITERATIONS.
SUM OF RESIDUALS =	.000000001B	AFTER	738 ITERATIONS.

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SUM OF RESIDUALS = .0000000001 AFTER 1000 ITERATIONS.

AFTER THOMPSON-SOLVER, BEFORE FINAL CLUSTERING:

(S FOR CONSTANT XI LINE AT J= 1
.170000E+02 .170000E+02 .170000E+02 .170000E+02 .170000E+02 .170000E+02 .170000E+02 .170000E+02 .170000E+02 .170000E+02
.170000E+02 .170000E+02 .170000E+02 .170000E+02 .170000E+02 .170000E+02 .170000E+02 .170000E+02 .170000E+02 .170000E+02

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 .170000E+02  .170000E+02

Y S FOR CONSTANT XI LINE AT J=    1
 .357500E+01  .355500E+01  .352863E+01  .349425E+01  .345001E+01  .339411E+01  .332505E+01  .324203E+01  .314551E+01  .303752E+01
 .292176E+01  .280324E+01  .268748E+01  .257949E+01  .248297E+01  .239995E+01  .233089E+01  .227499E+01  .223075E+01  .219637E+01
 .217000E+01  .203600E+01

X S FOR CONSTANT XI LINE AT J=   11
 .687500E+01  .688068E+01  .688485E+01  .688692E+01  .688641E+01  .688291E+01  .687604E+01  .686547E+01  .685085E+01  .683178E+01
 .680782E+01  .677842E+01  .674285E+01  .670018E+01  .664910E+01  .658780E+01  .651357E+01  .642222E+01  .630677E+01  .615434E+01
 .593666E+01  .550000E+01

Y S FOR CONSTANT XI LINE AT J=   11
 .335640E+01  .328551E+01  .321491E+01  .314441E+01  .307386E+01  .300313E+01  .293213E+01  .286073E+01  .278883E+01  .271630E+01
 .264298E+01  .256869E+01  .249318E+01  .241612E+01  .233706E+01  .225535E+01  .217001E+01  .207944E+01  .198072E+01  .186778E+01
 .172512E+01  .144900E+01

X S FOR CONSTANT XI LINE AT J=   21
 .587200E+01  .588546E+01  .589603E+01  .589342E+01  .588216E+01  .586228E+01  .583351E+01  .579533E+01  .574693E+01  .568725E+01
 .561435E+01  .552793E+01  .542417E+01  .530067E+01  .515374E+01  .497866E+01  .476920E+01  .451676E+01  .420827E+01  .381983E+01
 .328773E+01  .180000E+01

Y S FOR CONSTANT XI LINE AT J=   21
 .308150E+01  .305186E+01  .301740E+01  .298016E+01  .294119E+01  .290113E+01  .286034E+01  .281904E+01  .277731E+01  .273506E+01
 .269204E+01  .264770E+01  .260106E+01  .255058E+01  .249376E+01  .242674E+01  .234357E+01  .223485E+01  .208522E+01  .186694E+01
 .151541E+01  .319000E+00

X S FOR CONSTANT XI LINE AT J=   31
 .581600E+01  .580920E+01  .579348E+01  .576787E+01  .573069E+01  .568036E+01  .561538E+01  .553423E+01  .543536E+01  .531708E+01
 .517750E+01  .501467E+01  .482644E+01  .461056E+01  .436480E+01  .408704E+01  .377550E+01  .342878E+01  .304520E+01  .261964E+01
 .212816E+01  .100000E+01

Y S FOR CONSTANT XI LINE AT J=   31
 .306630E+01  .308973E+01  .311924E+01  .315688E+01  .320178E+01  .325341E+01  .331009E+01  .337013E+01  .343161E+01  .349229E+01
 .354948E+01  .359986E+01  .363930E+01  .366254E+01  .366281E+01  .363127E+01  .355625E+01  .342200E+01  .320608E+01  .287197E+01
 .233688E+01  .450000E+00

X S FOR CONSTANT XI LINE AT J=   41
 .680000E+01  .685128E+01  .690621E+01  .694925E+01  .697506E+01  .698123E+01  .696609E+01  .692789E+01  .686466E+01  .677410E+01
 .665355E+01  .649998E+01  .630912E+01  .607598E+01  .579266E+01  .544736E+01  .502188E+01  .448868E+01  .380938E+01  .294641E+01
 .192478E+01  .100000E+01

Y S FOR CONSTANT XI LINE AT J=   41
 .343000E+01  .353944E+01  .378353E+01  .397930E+01  .418502E+01  .439971E+01  .462284E+01  .485401E+01  .509265E+01  .533783E+01
 .558815E+01  .584178E+01  .609654E+01  .634999E+01  .659925E+01  .684032E+01  .706625E+01  .726261E+01  .739671E+01  .739334E+01
 .708931E+01  .600000E+01

EPSIL=     1.07191      AND F=      .00000      AFTER   5 ITERATIONS.

EPSIL=     1.07165      AND F=      .00000      AFTER   5 ITERATIONS.

EPSIL=     1.07190      AND F=      .00000      AFTER   5 ITERATIONS.

EPSIL=     1.07910      AND F=      .00000      AFTER   5 ITERATIONS.

EPSIL=     1.08128      AND F=      .00000      AFTER   5 ITERATIONS.

EPSIL=     1.06928      AND F=      .00000      AFTER   5 ITERATIONS.

EPSIL=     1.06729      AND F=      .00000      AFTER   5 ITERATIONS.

EPSIL=     1.06021      AND F=      .00000      AFTER   5 ITERATIONS.

EPSIL=     1.05090      AND F=      .00000      AFTER   5 ITERATIONS.

EPSIL=     1.04168      AND F=      .00000      AFTER   4 ITERATIONS.
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EPSIL=	1.03399	AND F=	.00000	AFTER	4 ITERATIONS.
EPSIL=	1.02824	AND F=	.00000	AFTER	4 ITERATIONS.
EPSIL=	1.02391	AND F=	.00000	AFTER	4 ITERATIONS.
EPSIL=	1.02057	AND F=	.00000	AFTER	4 ITERATIONS.
EPSIL=	1.01863	AND F=	.00000	AFTER	4 ITERATIONS.
EPSIL=	1.01701	AND F=	.00000	AFTER	4 ITERATIONS.
EPSIL=	1.01610	AND F=	.00000	AFTER	4 ITERATIONS.
EPSIL=	1.01519	AND F=	.00000	AFTER	4 ITERATIONS.
EPSIL=	1.01432	AND F=	.00000	AFTER	3 ITERATIONS.
EPSIL=	1.01349	AND F=	.00000	AFTER	3 ITERATIONS.
EPSIL=	1.01300	AND F=	.00000	AFTER	3 ITERATIONS.
EPSIL=	1.01248	AND F=	.00000	AFTER	3 ITERATIONS.
EPSIL=	1.01221	AND F=	.00000	AFTER	3 ITERATIONS.
EPSIL=	1.01188	AND F=	.00000	AFTER	3 ITERATIONS.
EPSIL=	1.01152	AND F=	.00000	AFTER	3 ITERATIONS.
EPSIL=	1.01110	AND F=	.00000	AFTER	3 ITERATIONS.
EPSIL=	1.01065	AND F=	.00000	AFTER	3 ITERATIONS.
EPSIL=	1.01016	AND F=	.00000	AFTER	2 ITERATIONS.
EPSIL=	1.00987	AND F=	.00000	AFTER	2 ITERATIONS.
EPSIL=	1.00958	AND F=	.00000	AFTER	3 ITERATIONS.
EPSIL=	1.00922	AND F=	.00000	AFTER	3 ITERATIONS.
EPSIL=	1.00888	AND F=	.00000	AFTER	3 ITERATIONS.
EPSIL=	1.00848	AND F=	.00000	AFTER	3 ITERATIONS.
EPSIL=	1.00815	AND F=	.00000	AFTER	3 ITERATIONS.
EPSIL=	1.00772	AND F=	.00000	AFTER	3 ITERATIONS.
EPSIL=	1.00728	AND F=	.00000	AFTER	3 ITERATIONS.
EPSIL=	1.00702	AND F=	.00000	AFTER	3 ITERATIONS.
EPSIL=	1.00662	AND F=	.00000	AFTER	3 ITERATIONS.
EPSIL=	1.00614	AND F=	.00000	AFTER	4 ITERATIONS.
EPSIL=	1.00587	AND F=	.00000	AFTER	4 ITERATIONS.
EPSIL=	1.00597	AND F=	.00000	AFTER	4 ITERATIONS.
EPSIL=	1.00552	AND F=	.00000	AFTER	4 ITERATIONS.
EPSIL=	1.00570	AND F=	.00000	AFTER	4 ITERATIONS.
EPSIL=	1.00681	AND F=	.00000	AFTER	3 ITERATIONS.

```
EPSIL=     1.00878      AND F=      .00000      AFTER   3 ITERATIONS.

EPSIL=     1.00956      AND F=      .00000      AFTER   3 ITERATIONS.

AFTER FINAL CLUSTERING:

X S FOR CONSTANT XI LINE AT J=    1
 .170000E+02  .170000E+02  .170000E+02  .170000E+02  .170000E+02  .170000E+02  .170000E+02  .170000E+02  .170000E+02  .170000E+02
 .170000E+02  .170000E+02  .170000E+02  .170000E+02  .170000E+02  .170000E+02  .170000E+02  .170000E+02  .170000E+02  .170000E+02
 .170000E+02  .170000E+02

Y S FOR CONSTANT XI LINE AT J=    1
 .357500E+01  .355500E+01  .352828E+01  .349288E+01  .344671E+01  .338754E+01  .331342E+01  .322321E+01  .311718E+01  .299755E+01
 .286862E+01  .273638E+01  .260745E+01  .248782E+01  .238179E+01  .229158E+01  .221746E+01  .215829E+01  .211212E+01  .207674E+01
 .205000E+01  .203000E+01

X S FOR CONSTANT XI LINE AT J=    2
 .140000E+02  .140023E+02  .140053E+02  .140091E+02  .140138E+02  .140193E+02  .140254E+02  .140317E+02  .140375E+02  .140420E+02
 .140445E+02  .140445E+02  .140420E+02  .140375E+02  .140316E+02  .140253E+02  .140192E+02  .140137E+02  .140091E+02  .140053E+02
 .140023E+02  .140000E+02

Y S FOR CONSTANT XI LINE AT J=    2
 .357500E+01  .355513E+01  .352855E+01  .349335E+01  .344736E+01  .338835E+01  .331434E+01  .322414E+01  .311800E+01  .299811E+01
 .286883E+01  .273618E+01  .260690E+01  .248701E+01  .238086E+01  .229067E+01  .221666E+01  .215764E+01  .211165E+01  .207645E+01
 .204987E+01  .203000E+01

X S FOR CONSTANT XI LINE AT J=    3
 .120000E+02  .120009E+02  .120009E+02  .120015E+02  .120023E+02  .120033E+02  .120045E+02  .120058E+02  .120071E+02  .120081E+02
 .120086E+02  .120086E+02  .120080E+02  .120070E+02  .120057E+02  .120044E+02  .120032E+02  .120022E+02  .120014E+02  .120008E+02
 .120004E+02  .120000E+02

Y S FOR CONSTANT XI LINE AT J=    3
 .357500E+01  .355500E+01  .352827E+01  .349289E+01  .344673E+01  .338756E+01  .331345E+01  .322324E+01  .311721E+01  .299787E+01
 .286865E+01  .273638E+01  .260744E+01  .248779E+01  .238176E+01  .229156E+01  .221744E+01  .215827E+01  .211211E+01  .207673E+01
 .205000E+01  .203000E+01

X S FOR CONSTANT XI LINE AT J=    4
 .100000E+02  .100059E+02  .100139E+02  .100228E+02  .100341E+02  .100473E+02  .100618E+02  .100766E+02  .100901E+02  .101005E+02
 .101063E+02  .101064E+02  .101007E+02  .100904E+02  .100769E+02  .100622E+02  .100476E+02  .100344E+02  .100229E+02  .100135E+02
 .100059E+02  .100000E+02

Y S FOR CONSTANT XI LINE AT J=    4
 .357500E+01  .355508E+01  .353050E+01  .349714E+01  .345385E+01  .339863E+01  .332974E+01  .324613E+01  .314805E+01  .303783E+01
 .291849E+01  .279645E+01  .267739E+01  .256685E+01  .246877E+01  .238516E+01  .231627E+01  .226107E+01  .221781E+01  .218447E+01
 .215911E+01  .214000E+01

X S FOR CONSTANT XI LINE AT J=    5
 .900000E+01  .900303E+01  .900696E+01  .901200E+01  .901828E+01  .902586E+01  .903451E+01  .904371E+01  .905251E+01  .905963E+01
 .906380E+01  .906416E+01  .906064E+01  .905397E+01  .904539E+01  .903617E+01  .902733E+01  .901947E+01  .901286E+01  .900750E+01
 .900328E+01  .900000E+01

Y S FOR CONSTANT XI LINE AT J=    5
 .357500E+01  .355522E+01  .352914E+01  .349505E+01  .345114E+01  .339555E+01  .332671E+01  .324376E+01  .314705E+01  .303857E+01
 .292208E+01  .280274E+01  .268623E+01  .257772E+01  .248099E+01  .239804E+01  .232923E+01  .227367E+01  .222981E+01  .219578E+01
 .216973E+01  .215000E+01

X S FOR CONSTANT XI LINE AT J=    6
 .800000E+01  .801329E+01  .803098E+01  .805243E+01  .807957E+01  .811171E+01  .814762E+01  .818469E+01  .821891E+01  .824547E+01
 .825999E+01  .825977E+01  .824486E+01  .821791E+01  .818337E+01  .814413E+01  .811025E+01  .807850E+01  .805160E+01  .802989E+01
 .801297E+01  .800000E+01

Y S FOR CONSTANT XI LINE AT J=    6
 .353140E+01  .351635E+01  .349574E+01  .346767E+01  .342957E+01  .337874E+01  .331219E+01  .322758E+01  .312422E+01  .300394E+01
 .287180E+01  .273538E+01  .260329E+01  .248311E+01  .237983E+01  .229531E+01  .222873E+01  .217774E+01  .213949E+01  .211114E+01
 .209028E+01  .207500E+01
```

X S FOR CONSTANT XI LINE AT J= 7
.750000E+01 .751496E+01 .753453E+01 .755956E+01 .759070E+01 .762772E+01 .766918E+01 .771179E+01 .775038E+01 .777878E+01
.779158E+01 .778612E+01 .776364E+01 .772877E+01 .768776E+01 .764630E+01 .760831E+01 .757580E+01 .754929E+01 .752836E+01
.751222E+01 .750000E+01

Y S FOR CONSTANT XI LINE AT J= 7
.347040E+01 .345702E+01 .343847E+01 .341279E+0. .337728E+01 .332888E+01 .326417E+01 .318020E+01 .307587E+01 .295301E+01
.281735E+01 .267757E+01 .254316E+01 .242196E+01 .231852E+01 .223399E+01 .216716E+01 .211561E+01 .207658E+01 .204743E+01
.202585E+01 .201000E+01

X S FOR CONSTANT XI LINE AT J= 8
.725000E+01 .726349E+01 .728119E+01 .730385E+01 .733180E+01 .736454E+01 .740002E+01 .743415E+01 .746071E+01 .747261E+01
.746418E+01 .743376E+01 .738472E+01 .732413E+01 .726001E+01 .719893E+01 .714504E+01 .710023E+01 .706446E+01 .703672E+01
.701569E+01 .700000E+01

Y S FOR CONSTANT XI LINE AT J= 8
.342990E+01 .341505E+01 .339430E+01 .336539E+01 .332517E+01 .327023E+01 .319674E+01 .310164E+01 .298400E+01 .284686E+01
.269762E+01 .254693E+01 .240569E+01 .228202E+01 .217987E+01 .209931E+01 .203794E+01 .199240E+01 .195909E+01 .193494E+01
.191752E+01 .190500E+01

X S FOR CONSTANT XI LINE AT J= 9
.712500E+01 .713195E+01 .714146E+01 .715441E+01 .717125E+01 .719140E+01 .721240E+01 .722922E+01 .723419E+01 .721873E+01
.717671E+01 .710798E+01 .701928E+01 .692169E+01 .682644E+01 .674144E+01 .667114E+01 .661545E+01 .657272E+01 .654070E+01
.651713E+01 .650000E+01

Y S FOR CONSTANT XI LINE AT J= 9
.340710E+01 .338834E+01 .336227E+01 .332640E+01 .327752E+01 .321170E+01 .312476E+01 .301337E+01 .287704E+01 .272024E+01
.255304E+01 .238910E+01 .224124E+01 .211745E+01 .201972E+01 .194568E+01 .189051E+01 .185016E+01 .182106E+01 .180026E+01
.178547E+01 .177500E+01

X S FOR CONSTANT XI LINE AT J= 10
.700000E+01 .700383E+01 .700908E+01 .701622E+01 .702526E+01 .703538E+01 .704356E+01 .704352E+01 .702552E+01 .697864E+01
.689604E+01 .678056E+01 .664427E+01 .650539E+01 .637820E+01 .627211E+01 .618817E+01 .612415E+01 .607666E+01 .604216E+01
.601748E+01 .600000E+01

Y S FOR CONSTANT XI LINE AT J= 10
.338260E+01 .336297E+01 .333511E+01 .329594E+01 .324151E+01 .316707E+01 .306764E+01 .293938E+01 .278223E+01 .260292E+01
.241560E+01 .223822E+01 .208517E+01 .196227E+01 .186813E+01 .179608E+01 .174224E+01 .170296E+01 .167479E+01 .165483E+01
.164080E+01 .163100E+01

X S FOR CONSTANT XI LINE AT J= 11
.687500E+01 .687675E+01 .687907E+01 .688204E+01 .688520E+01 .688708E+01 .688364E+01 .686674E+01 .682345E+01 .673947E+01
.660769E+01 .643665E+01 .624864E+01 .606852E+01 .591410E+01 .579075E+01 .569654E+01 .562700E+01 .557698E+01 .554165E+01
.551702E+01 .550000E+01

Y S FOR CONSTANT XI LINE AT J= 11
.335640E+01 .333647E+01 .330760E+01 .326811E+01 .320723E+01 .312513E+01 .301364E+01 .286810E+01 .268906E+01 .248661E+01
.228061E+01 .209298E+01 .193630E+01 .181114E+01 .171052E+01 .163137E+01 .157163E+01 .152794E+01 .149672E+01 .147477E+01
.145951E+01 .144900E+01

X S FOR CONSTANT XI LINE AT J= 12
.675000E+01 .675022E+01 .675053E+01 .675003E+01 .674845E+01 .674335E+01 .672941E+01 .669585E+01 .662523E+01 .649907E+01
.631208E+01 .608293E+01 .584521E+01 .562807E+01 .544888E+01 .530928E+01 .520531E+01 .513046E+01 .507788E+01 .504156E+01
.501677E+01 .500000E+01

Y S FOR CONSTANT XI LINE AT J= 12
.332840E+01 .330894E+01 .327886E+01 .323560E+01 .317301E+01 .308415E+01 .296152E+01 .279960E+01 .260014E+01 .237800E+01
.215923E+01 .196567E+01 .180293E+01 .166769E+01 .155481E+01 .146606E+01 .139951E+01 .135135E+01 .131738E+01 .129387E+01
.127776E+01 .126696E+01

X S FOR CONSTANT XI LINE AT J= 13
.662500E+01 .662405E+01 .662252E+01 .661974E+01 .661447E+01 .660375E+01 .658061E+01 .653037E+01 .642916E+01 .625450E+01
.600763E+01 .572044E+01 .543510E+01 .518406E+01 .498086E+01 .482588E+01 .471293E+01 .463332E+01 .457851E+01 .454139E+01
.451653E+01 .450000E+01

Y S FOR CONSTANT XI LINE AT J= 13
.329870E+01 .327872E+01 .324870E+01 .320397E+01 .313814E+01 .304308E+01 .290992E+01 .273256E+01 .251521E+01 .227943E+01

.205499E+01 .185668E+01 .168322E+01 .153044E+01 .140266E+01 .130266E+01 .122836E+01 .117527E+01 .113837E+01 .111321E+01
.109629E+01 .108500E+01

X S FOR CONSTANT XI LINE AT J= 14
.650000E+01 .649836E+01 .649353E+01 .648572E+01 .646911E+01 .643809E+01 .636971E+01 .623198E+01 .600232E+01
.569405E+01 .535178E+01 .502147E+01 .473716E+01 .451074E+01 .434113E+01 .421979E+01 .413582E+01 .407903E+01
.404163E+01 .400000E+01

Y S FOR CONSTANT XI LINE AT J= 14
.326720E+01 .329723E+01 .321685E+01 .317091E+01 .310193E+01 .300052E+01 .285760E+01 .266616E+01 .243583E+01 .219508E+01
.196997E+01 .176259E+01 .157064E+01 .139695E+01 .125206E+01 .113661E+01 .105706E+01 .998872E+00 .959025E+00 .932271E+00
.914243E+00 .902900E+00

X S FOR CONSTANT XI LINE AT J= 15
.637500E+01 .637317E+01 .637027E+01 .636579E+01 .635795E+01 .634213E+01 .630479E+01 .621728E+01 .604306E+01 .576666E+01
.541327E+01 .505223E+01 .471715E+01 .443651E+01 .421238E+01 .399654E+01 .382106E+01 .373536E+01 .367812E+01 .364094E+01
.361590E+01 .360000E+01

Y S FOR CONSTANT XI LINE AT J= 15
.323390E+01 .321398E+01 .318528E+01 .313623E+01 .306518E+01 .295985E+01 .280971E+01 .261140E+01 .238064E+01 .214733E+01
.192534E+01 .170861E+01 .149829E+01 .130556E+01 .114453E+01 .101989E+01 .928940E+00 .865345E+00 .822187E+00 .793484E+00
.774653E+00 .762900E+00

X S FOR CONSTANT XI LINE AT J= 16
.625000E+01 .624901E+01 .624749E+01 .624536E+01 .624051E+01 .622530E+01 .617899E+01 .606549E+01 .585013E+01 .552883E+01
.513914E+01 .471742E+01 .432895E+01 .399984E+01 .374375E+01 .355638E+01 .342551E+01 .333709E+01 .327853E+01 .324040E+01
.321579E+01 .320000E+01

Y S FOR CONSTANT XI LINE AT J= 16
.319880E+01 .317862E+01 .314773E+01 .309965E+01 .302620E+01 .291653E+01 .276089E+01 .256105E+01 .233853E+01 .211632E+01
.189403E+01 .166273E+01 .145078E+01 .121935E+01 .104920E+01 .909985E+00 .813086E+00 .746067E+00 .701066E+00 .671944E+00
.652198E+00 .639800E+00

X S FOR CONSTANT XI LINE AT J= 17
.612500E+01 .612771E+01 .613198E+01 .613636E+01 .613746E+01 .612126E+01 .606055E+01 .591855E+01 .566911E+01 .531664E+01
.489577E+01 .445733E+01 .405149E+01 .371102E+01 .344784E+01 .325687E+01 .312455E+01 .303575E+01 .297743E+01 .293968E+01
.291594E+01 .290000E+01

Y S FOR CONSTANT XI LINE AT J= 17
.316190E+01 .314208E+01 .311100E+01 .306256E+01 .298769E+01 .287563E+01 .271999E+01 .252895E+01 .232394E+01 .211605E+01
.189410E+01 .165121E+01 .140334E+01 .117672E+01 .988951E+00 .845495E+00 .742247E+00 .671222E+00 .623785E+00 .592726E+00
.572058E+00 .559800E+00

X S FOR CONSTANT XI LINE AT J= 18
.600000E+01 .601911E+01 .603167E+01 .604770E+01 .605312E+01 .603017E+01 .594814E+01 .577705E+01 .549601E+01 .511449E+01
.466717E+01 .420636E+01 .378237E+01 .342899E+01 .315498E+01 .296098E+01 .282560E+01 .273570E+01 .267705E+01 .263952E+01
.261526E+01 .260000E+01

Y S FOR CONSTANT XI LINE AT J= 18
.312916E+01 .310851E+01 .308250E+01 .303592E+01 .295991E+01 .284634E+01 .269436E+01 .251684E+01 .232991E+01 .213189E+01
.190639E+01 .169619E+01 .137964E+01 .113584E+01 .935947E+00 .785281E+00 .679431E+00 .600373E+00 .551112E+00 .519073E+00
.498501E+00 .485400E+00

X S FOR CONSTANT XI LINE AT J= 19
.595000E+01 .596028E+01 .597340E+01 .598569E+01 .599412E+01 .599554E+01 .593938E+01 .583763E+01 .563276E+01 .532767E+01
.494517E+01 .456198E+01 .421904E+01 .393039E+01 .368842E+01 .348652E+01 .332810E+01 .321364E+01 .313718E+01 .308922E+01
.305516E+01 .303000E+01

Y S FOR CONSTANT XI LINE AT J= 19
.310711E+01 .308988E+01 .306096E+01 .301284E+01 .293522E+01 .282290E+01 .268033E+01 .252098E+01 .235191E+01 .216009E+01
.192977E+01 .169853E+01 .135724E+01 .109689E+01 .884167E+00 .724055E+00 .610652E+00 .533772E+00 .485150E+00 .450454E+00
.429598E+00 .416900E+00

X S FOR CONSTANT XI LINE AT J= 20
.590000E+01 .591293E+01 .592717E+01 .593537E+01 .592352E+01 .586584E+01 .573437E+01 .550622E+01 .517009E+01 .473418E+01
.423410E+01 .372774E+01 .326399E+01 .287855E+01 .258466E+01 .237500E+01 .222537E+01 .213845E+01 .207791E+01 .203944E+01
.201519E+01 .200000E+01

Y S FOR CONSTANT XI LINE AT J= 20
.309080E+01 .307811E+01 .304675E+01 .299718E+01 .291926E+01 .281208E+01 .268380E+01 .254923E+01 .239065E+01 .220140E+01
.195351E+01 .165085E+01 .134085E+01 .106357E+01 .839399E+00 .672339E+00 .555162E+00 .476394E+00 .424937E+00 .391944E+00
.371042E+00 .357900E+00

X S FOR CONSTANT XI LINE AT J= 21
.887200E+01 .888349E+01 .889385E+01 .889405E+01 .886679E+01 .878881E+01 .863611E+01 .838856E+01 .803436E+01 .758028E+01
.706308E+01 .654247E+01 .606835E+01 .567692E+01 .538061E+01 .517065E+01 .502871E+01 .493576E+01 .487615E+01 .483843E+01
.481477E+01 .480000E+01

Y S FOR CONSTANT XI LINE AT J= 21
.308150E+01 .306977E+01 .303464E+01 .298403E+01 .290903E+01 .281297E+01 .270407E+01 .258625E+01 .244831E+01 .226333E+01
.200715E+01 .168817E+01 .135875E+01 .106526E+01 .827154E+00 .649992E+00 .526065E+00 .443028E+00 .388977E+00 .354448E+00
.332653E+00 .319000E+00

X S FOR CONSTANT XI LINE AT J= 22
.585800E+01 .586409E+01 .586697E+01 .585564E+01 .581208E+01 .571536E+01 .554487E+01 .528052E+01 .490874E+01 .443550E+01
.389976E+01 .336441E+01 .287910E+01 .248037E+01 .218024E+01 .196879E+01 .182663E+01 .173402E+01 .167493E+01 .163770E+01
.161445E+01 .160000E+01

Y S FOR CONSTANT XI LINE AT J= 22
.307680E+01 .305763E+01 .302866E+01 .297882E+01 .290779E+01 .282707E+01 .273919E+01 .264219E+01 .251810E+01 .233528E+01
.206805E+01 .172865E+01 .137884E+01 .106592E+01 .813841E+00 .627121E+00 .497125E+00 .410440E+00 .354274E+00 .318554E+00
.296104E+00 .282100E+00

X S FOR CONSTANT XI LINE AT J= 23
.584400E+01 .584619E+01 .584219E+01 .581914E+01 .576072E+01 .564972E+01 .546701E+01 .519173E+01 .480848E+01 .432301E+01
.377638E+01 .323411E+01 .274792E+01 .236295E+01 .208878E+01 .185335E+01 .171626E+01 .162748E+01 .157108E+01 .153569E+01
.151366E+01 .150000E+01

Y S FOR CONSTANT XI LINE AT J= 23
.307210E+01 .305214E+01 .302026E+01 .297434E+01 .291768E+01 .285594E+01 .278957E+01 .271320E+01 .260407E+01 .242688E+01
.215463E+01 .180175E+01 .143326E+01 .110110E+01 .832310E+00 .633786E+00 .493817E+00 .401207E+00 .341279E+00 .303229E+00
.279360E+00 .264500E+00

X S FOR CONSTANT XI LINE AT J= 24
.583000E+01 .582923E+01 .581786E+01 .578318E+01 .571225E+01 .559054E+01 .539845E+01 .511329E+01 .471793E+01 .421835E+01
.365865E+01 .310850E+01 .262069E+01 .222854E+01 .193940E+01 .173932E+01 .160678E+01 .152146E+01 .146753E+01 .143383E+01
.141292E+01 .140000E+01

Y S FOR CONSTANT XI LINE AT J= 24
.306740E+01 .304736E+01 .301725E+01 .297808E+01 .293782E+01 .289525E+01 .285111E+01 .279467E+01 .269990E+01 .252744E+01
.224809E+01 .187771E+01 .148732E+01 .113436E+01 .848483E+00 .636428E+00 .488974E+00 .390925E+00 .327633E+00 .287551E+00
.262473E+00 .246900E+00

X S FOR CONSTANT XI LINE AT J= 25
.581600E+01 .581292E+01 .579268E+01 .574755E+01 .566810E+01 .553936E+01 .534024E+01 .504590E+01 .463754E+01 .412174E+01
.354663E+01 .298737E+01 .249702E+01 .210677E+01 .182187E+01 .162650E+01 .149805E+01 .141589E+01 .136423E+01 .133209E+01
.131223E+01 .130000E+01

Y S FOR CONSTANT XI LINE AT J= 25
.306270E+01 .304298E+01 .301797E+01 .298229E+01 .294793E+01 .294580E+01 .292281E+01 .288603E+01 .280562E+01 .263736E+01
.234892E+01 .195745E+01 .154217E+01 .116475E+01 .863195E+00 .638613E+00 .482938E+00 .379768E+00 .313395E+00 .271500E+00
.245373E+00 .229200E+00

X S FOR CONSTANT XI LINE AT J= 26
.580800E+01 .579818E+01 .576983E+01 .571856E+01 .563478E+01 .550211E+01 .529770E+01 .499443E+01 .457160E+01 .403658E+01
.344266E+01 .287206E+01 .237764E+01 .198795E+01 .170629E+01 .151489E+01 .139007E+01 .131075E+01 .126116E+01 .123046E+01
.121158E+01 .120000E+01

Y S FOR CONSTANT XI LINE AT J= 26
.305990E+01 .304273E+01 .302734E+01 .301606E+01 .300882E+01 .300600E+01 .300380E+01 .298720E+01 .292219E+01 .275847E+01
.245935E+01 .204324E+01 .159981E+01 .119987E+01 .877897E+00 .640153E+00 .476282E+00 .368162E+00 .298880E+00 .255334E+00
.228282E+00 .211600E+00

X S FOR CONSTANT XI LINE AT J= 27

.800000E+01 .878306E+01 .878094E+01 .869768E+01 .861806E+01 .847077E+01 .827068E+01 .808870E+01 .791993E+01 .784283E+01
.394421E+01 .276198E+01 .226192E+01 .187161E+01 .169232E+01 .140431E+01 .126270E+01 .120697E+01 .118630E+01 .112894E+01
.111097E+01 .110000E+01

Y S FOR CONSTANT XI LINE AT J= 27
.306720E+01 .309773E+01 .309863E+01 .309822E+01 .308718E+01 .307319E+01 .309218E+01 .309710E+01 .309936E+01 .299124E+01
.258016E+01 .213603E+01 .166103E+01 .123432E+01 .892119E+00 .641317E+00 .469146E+00 .366126E+00 .304078E+00 .238097E+00
.211118E+00 .194000E+00

X S FOR CONSTANT XI LINE AT J= 28
.879200E+01 .877287E+01 .874123E+01 .868908E+01 .860880E+01 .847382E+01 .828328E+01 .809299E+01 .790661E+01 .780280E+01
.328622E+01 .266013E+01 .218049E+01 .176808E+01 .148010E+01 .129481E+01 .117898E+01 .110187E+01 .106864E+01 .102782E+01
.101040E+01 .100000E+01

Y S FOR CONSTANT XI LINE AT J= 28
.306400E+01 .308178E+01 .307080E+01 .308897E+01 .310986E+01 .314137E+01 .318867E+01 .321976E+01 .318766E+01 .303760E+01
.271404E+01 .223808E+01 .172709E+01 .127160E+01 .907976E+00 .643068E+00 .462336E+00 .364948E+00 .322119E+00
.199491E+00 .177000E+00

X S FOR CONSTANT XI LINE AT J= 29
.880000E+01 .879482E+01 .878691E+01 .870986E+01 .863163E+01 .850306E+01 .830643E+01 .809768E+01 .788077E+01 .780378E+01
.323411E+01 .261877E+01 .210942E+01 .172238E+01 .146827E+01 .127871E+01 .116361E+01 .109301E+01 .106129E+01 .102827E+01
.100962E+01 .100000E+01

Y S FOR CONSTANT XI LINE AT J= 29
.306486E+01 .307294E+01 .308908E+01 .311899E+01 .316808E+01 .320964E+01 .327638E+01 .333681E+01 .339017E+01 .321427E+01
.289781E+01 .240934E+01 .187947E+01 .139848E+01 .101373E+01 .738934E+00 .544836E+00 .423761E+00 .361866E+00 .297674E+00
.260868E+00 .260000E+00

X S FOR CONSTANT XI LINE AT J= 30
.880000E+01 .879715E+01 .877839E+01 .873839E+01 .866866E+01 .859899E+01 .839889E+01 .820868E+01 .801978E+01 .792714E+01
.322838E+01 .258963E+01 .207863E+01 .169168E+01 .142862E+01 .126880E+01 .116294E+01 .109707E+01 .106732E+01 .102326E+01
.100879E+01 .100000E+01

Y S FOR CONSTANT XI LINE AT J= 30
.306290E+01 .307988E+01 .310942E+01 .314091E+01 .319461E+01 .326988E+01 .336388E+01 .345720E+01 .350886E+01 .350398E+01
.309996E+01 .260335E+01 .209423E+01 .164208E+01 .114394E+01 .883617E+00 .686094E+00 .529171E+00 .448718E+00 .389994E+00
.360419E+00 .360000E+00

X S FOR CONSTANT XI LINE AT J= 31
.881600E+01 .881072E+01 .879804E+01 .876811E+01 .870668E+01 .859994E+01 .841030E+01 .809978E+01 .781182E+01 .796038E+01
.322935E+01 .264097E+01 .203819E+01 .168622E+01 .140069E+01 .123804E+01 .113952E+01 .107801E+01 .104270E+01 .102090E+01
.100783E+01 .100000E+01

Y S FOR CONSTANT XI LINE AT J= 31
.306430E+01 .308863E+01 .311819E+01 .316026E+01 .322748E+01 .332867E+01 .344917E+01 .387708E+01 .366261E+01 .360864E+01
.331836E+01 .281363E+01 .222617E+01 .169944E+01 .127838E+01 .974202E+00 .768309E+00 .638339E+00 .561818E+00 .500348E+00
.468980E+00 .460000E+00

X S FOR CONSTANT XI LINE AT J= 32
.883000E+01 .882648E+01 .881781E+01 .879764E+01 .876397E+01 .864202E+01 .849021E+01 .831869E+01 .814969E+01 .803631E+01
.328427E+01 .265136E+01 .201499E+01 .163118E+01 .137974E+01 .122363E+01 .112923E+01 .107277E+01 .103911E+01 .101907E+01
.100712E+01 .100000E+01

Y S FOR CONSTANT XI LINE AT J= 32
.307220E+01 .309191E+01 .312403E+01 .317817E+01 .325367E+01 .336768E+01 .381948E+01 .369229E+01 .382073E+01 .382187E+01
.356347E+01 .305938E+01 .244705E+01 .189549E+01 .145739E+01 .114088E+01 .927472E+00 .790034E+00 .704096E+00 .661336E+00
.619309E+00 .600000E+00

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X S FOR CONSTANT XI LINE AT J=   33
 .884400E+01  .884385E+01  .884191E+01  .883340E+01  .880948E+01  .873822E+01  .880309E+01  .829874E+01  .901108E+01  .911301E+01
 .329617E+01  .254847E+01  .198612E+01  .159851E+01  .135223E+01  .120367E+01  .111604E+01  .106466E+01  .103449E+01  .101671E+01
 .100621E+01  .100000E+01

Y S FOR CONSTANT XI LINE AT J=   33
 .307820E+01  .309823E+01  .313161E+01  .318648E+01  .327350E+01  .340413E+01  .358461E+01  .380191E+01  .399618E+01  .404983E+01
 .382942E+01  .332348E+01  .268541E+01  .210610E+01  .164402E+01  .131196E+01  .108894E+01  .948949E+00  .866955E+00  .802878E+00
 .769718E+00  .760000E+00

X S FOR CONSTANT XI LINE AT J=   34
 .885600E+01  .886360E+01  .886920E+01  .887372E+01  .886432E+01  .881777E+01  .869188E+01  .843340E+01  .496241E+01  .428043E+01
 .330747E+01  .258251E+01  .199069E+01  .189122E+01  .134280E+01  .119844E+01  .111020E+01  .106092E+01  .103230E+01  .101858E+01
 .100677E+01  .100000E+01

Y S FOR CONSTANT XI LINE AT J=   34
 .308410E+01  .310358E+01  .313847E+01  .319828E+01  .328437E+01  .342791E+01  .363947E+01  .389627E+01  .418701E+01  .420793E+01
 .413125E+01  .364724E+01  .299641E+01  .239810E+01  .191780E+01  .157801E+01  .134662E+01  .119918E+01  .110836E+01  .106311E+01
 .101987E+01  .100000E+01

X S FOR CONSTANT XI LINE AT J=   35
 .887200E+01  .888411E+01  .890136E+01  .892048E+01  .893030E+01  .891080E+01  .882080E+01  .880392E+01  .819477E+01  .442193E+01
 .360370E+01  .862782E+01  .199039E+01  .187821E+01  .132473E+01  .110128E+01  .110048E+01  .108484E+01  .102880E+01  .101380E+01
 .100808E+01  .100000E+01

Y S FOR CONSTANT XI LINE AT J=   35
 .309010E+01  .310660E+01  .313613E+01  .318808E+01  .328836E+01  .343832E+01  .366800E+01  .397482E+01  .432088E+01  .485249E+01
 .446654E+01  .400193E+01  .333393E+01  .270324E+01  .220878E+01  .184443E+01  .160671E+01  .148406E+01  .136068E+01  .130400E+01
 .127013E+01  .128000E+01

X S FOR CONSTANT XI LINE AT J=   36
 .890000E+01  .890870E+01  .890162E+01  .899708E+01  .601088E+01  .600937E+01  .893894E+01  .874252E+01  .831837E+01  .480419E+01
 .361372E+01  .866044E+01  .196998E+01  .183793E+01  .129004E+01  .118882E+01  .108380E+01  .104482E+01  .102299E+01  .101080E+01
 .100394E+01  .100000E+01

Y S FOR CONSTANT XI LINE AT J=   36
 .312740E+01  .314870E+01  .317780E+01  .323190E+01  .332604E+01  .346949E+01  .373160E+01  .407700E+01  .447794E+01  .479080E+01
 .479764E+01  .437791E+01  .369121E+01  .302730E+01  .249974E+01  .212071E+01  .186980E+01  .171119E+01  .161394E+01  .184841E+01
 .182068E+01  .180000E+01

X S FOR CONSTANT XI LINE AT J=   37
 .606000E+01  .606606E+01  .607787E+01  .609368E+01  .611278E+01  .613009E+01  .608128E+01  .892363E+01  .849080E+01  .483940E+01
 .384068E+01  .801173E+01  .204443E+01  .167278E+01  .130836E+01  .116811E+01  .108632E+01  .104873E+01  .102360E+01  .101108E+01
 .100404E+01  .100000E+01

Y S FOR CONSTANT XI LINE AT J=   37
 .316980E+01  .318878E+01  .321806E+01  .327048E+01  .337168E+01  .383196E+01  .370023E+01  .416926E+01  .462776E+01  .804468E+01
 .818307E+01  .486882E+01  .421840E+01  .384676E+01  .301118E+01  .262747E+01  .237300E+01  .221248E+01  .211436E+01  .806848E+01
 .802087E+01  .800000E+01

X S FOR CONSTANT XI LINE AT J=   38
 .616000E+01  .617030E+01  .618867E+01  .621086E+01  .624036E+01  .626370E+01  .624971E+01  .613287E+01  .879000E+01  .811663E+01
 .405684E+01  .297641E+01  .211161E+01  .169400E+01  .130829E+01  .116969E+01  .108394E+01  .104347E+01  .102209E+01  .101039E+01
 .100378E+01  .100000E+01

Y S FOR CONSTANT XI LINE AT J=   38
 .321230E+01  .322979E+01  .326018E+01  .331322E+01  .340738E+01  .367014E+01  .393014E+01  .484398E+01  .477864E+01  .830441E+01
 .858625E+01  .839789E+01  .478490E+01  .409697E+01  .354228E+01  .314464E+01  .288163E+01  .271646E+01  .261809E+01  .256608E+01
 .862071E+01  .860000E+01
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X S FOR CONSTANT XI LINE AT J=   39
 .636000E+01  .636804E+01  .638090E+01  .640027E+01  .642388E+01  .644837E+01  .644290E+01  .638268E+01  .604986E+01  .530611E+01
 .433347E+01  .311860E+01  .213212E+01  .156049E+01  .126441E+01  .112486E+01  .106006E+01  .102938E+01  .101426E+01  .100646E+01
 .100229E+01  .100000E+01

Y S FOR CONSTANT XI LINE AT J=   39
 .329720E+01  .331869E+01  .334784E+01  .340381E+01  .380193E+01  .367037E+01  .394071E+01  .438390E+01  .497878E+01  .861088E+01
 .602904E+01  .897262E+01  .840614E+01  .469565E+01  .410914E+01  .360488E+01  .340394E+01  .322603E+01  .312189E+01  .306648E+01
 .302181E+01  .300000E+01

X S FOR CONSTANT XI LINE AT J=   40
 .660000E+01  .660366E+01  .660991E+01  .662044E+01  .663842E+01  .666338E+01  .667968E+01  .662098E+01  .638342E+01  .578113E+01
 .478978E+01  .349820E+01  .235786E+01  .163463E+01  .128011E+01  .112194E+01  .106398E+01  .102484E+01  .101124E+01  .100408E+01
 .100169E+01  .100000E+01

Y S FOR CONSTANT XI LINE AT J=   40
 .336000E+01  .339964E+01  .343378E+01  .348860E+01  .360391E+01  .376470E+01  .400034E+01  .480400E+01  .814662E+01  .800678E+01
 .646040E+01  .666084E+01  .633081E+01  .872178E+01  .818606E+01  .472460E+01  .443019E+01  .424341E+01  .412978E+01  .406234E+01
 .402208E+01  .400000E+01

X S FOR CONSTANT XI LINE AT J=   41
 .680000E+01  .680582E+01  .681860E+01  .683314E+01  .686380E+01  .691006E+01  .696436E+01  .697483E+01  .682093E+01  .637870E+01
 .881184E+01  .436022E+01  .319702E+01  .226248E+01  .160424E+01  .137108E+01  .120060E+01  .110710E+01  .106616E+01  .102897E+01
 .100043E+01  .100000E+01

Y S FOR CONSTANT XI LINE AT J=   41
 .343000E+01  .344913E+01  .346883E+01  .363908E+01  .363040E+01  .380161E+01  .408017E+01  .483148E+01  .819800E+01  .601728E+01
 .679481E+01  .728778E+01  .741608E+01  .724608E+01  .692208E+01  .660918E+01  .637803E+01  .621478E+01  .611874E+01  .606897E+01
 .602064E+01  .600000E+01

X S FOR CONSTANT XI LINE AT J=   42
 .700000E+01  .701316E+01  .703847E+01  .707830E+01  .713084E+01  .721140E+01  .730938E+01  .730183E+01  .721780E+01  .696200E+01
 .616190E+01  .802766E+01  .303671E+01  .203063E+01  .212223E+01  .166216E+01  .137638E+01  .120090E+01  .110060E+01  .106208E+01
 .101890E+01  .100000E+01

Y S FOR CONSTANT XI LINE AT J=   42
 .348300E+01  .349834E+01  .368894E+01  .387078E+01  .366710E+01  .381800E+01  .400367E+01  .486867E+01  .880000E+01  .621604E+01
 .718611E+01  .792070E+01  .831110E+01  .843808E+01  .837210E+01  .826108E+01  .816406E+01  .809663E+01  .806164E+01  .802497E+01
 .800910E+01  .800000E+01

X S FOR CONSTANT XI LINE AT J=   43
 .760000E+01  .781006E+01  .768780E+01  .788046E+01  .760468E+01  .760117E+01  .770680E+01  .760078E+01  .790004E+01  .767890E+01
 .704043E+01  .616487E+01  .812904E+01  .423630E+01  .386263E+01  .314680E+01  .867898E+01  .870720E+01  .860931E+01  .888307E+01
 .881903E+01  .880000E+01

Y S FOR CONSTANT XI LINE AT J=   43
 .346000E+01  .387738E+01  .360783E+01  .366018E+01  .378181E+01  .390019E+01  .410080E+01  .463400E+01  .833834E+01  .689237E+01
 .736091E+01  .829060E+01  .893368E+01  .934269E+01  .961004E+01  .977466E+01  .987301E+01  .993034E+01  .996360E+01  .998272E+01
 .999370E+01  .100000E+02

X S FOR CONSTANT XI LINE AT J=   44
 .800000E+01  .801391E+01  .803786E+01  .807880E+01  .813786E+01  .823138E+01  .838072E+01  .880164E+01  .889408E+01  .866394E+01
 .830704E+01  .783125E+01  .717876E+01  .661084E+01  .897710E+01  .889780E+01  .838284E+01  .819973E+01  .810708E+01  .808177E+01
 .801918E+01  .800000E+01

Y S FOR CONSTANT XI LINE AT J=   44
 .360000E+01  .361487E+01  .363073E+01  .368730E+01  .378008E+01  .390210E+01  .412368E+01  .461363E+01  .812808E+01  .896886E+01
 .697134E+01  .797866E+01  .877916E+01  .929398E+01  .959621E+01  .977243E+01  .987322E+01  .993074E+01  .996370E+01  .998268E+01
 .999364E+01  .100000E+02
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X S FOR CONSTANT XI LINE AT J= 45

.900000E+01 .901099E+01 .908098E+01 .906779E+01 .910870E+01 .916900E+01 .926716E+01 .938301E+01 .948708E+01 .959864E+01
.939080E+01 .924782E+01 .904271E+01 .880170E+01 .856647E+01 .837391E+01 .823302E+01 .813787E+01 .807612E+01 .803778E+01
.801428E+01 .800000E+01

Y S FOR CONSTANT XI LINE AT J= 45

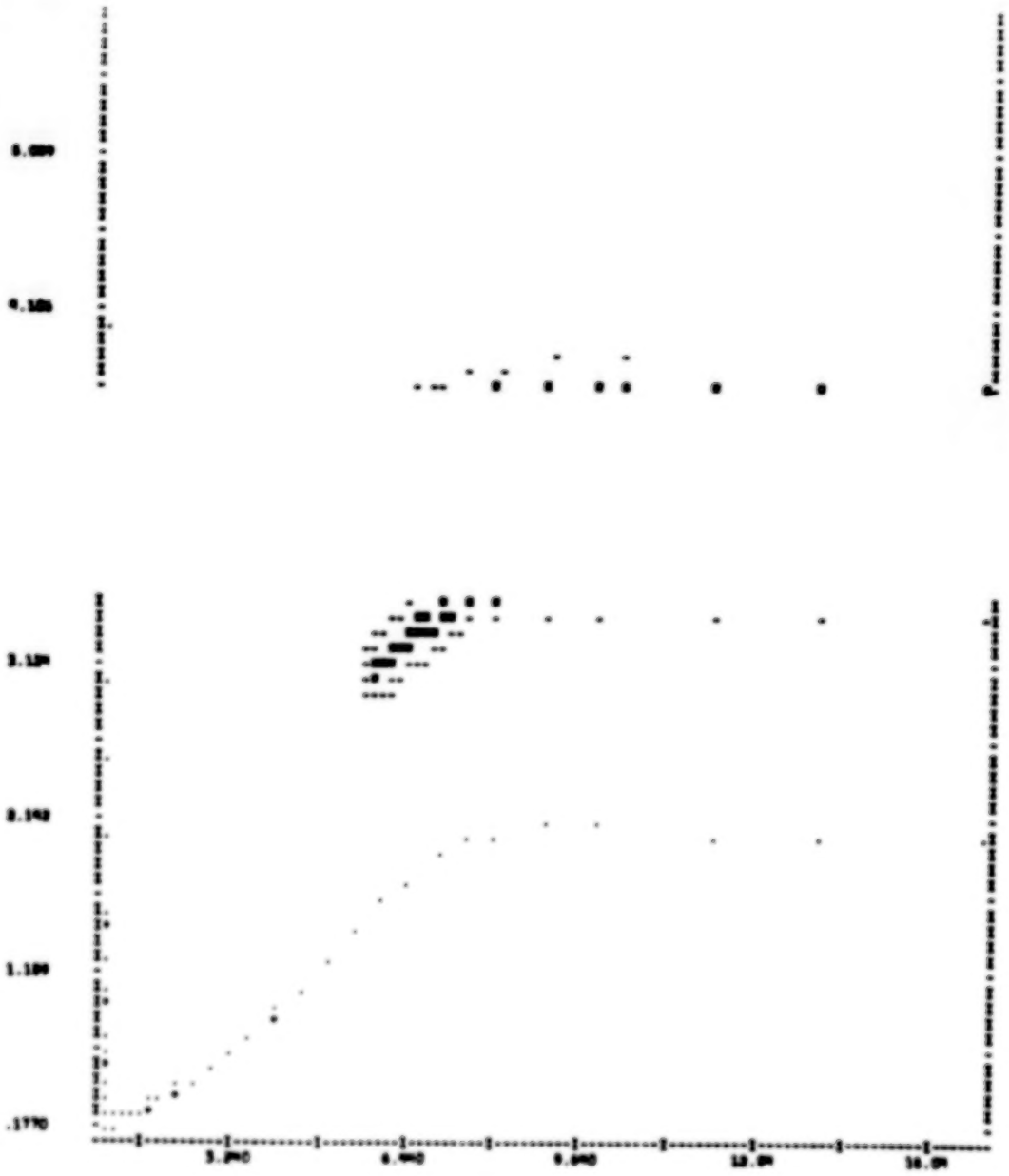
.368000E+01 .366678E+01 .369488E+01 .379109E+01 .382038E+01 .398098E+01 .416499E+01 .430477E+01 .440094E+01 .446908E+01
.681162E+01 .737805E+01 .817482E+01 .881265E+01 .926856E+01 .956162E+01 .979800E+01 .986868E+01 .992252E+01 .996209E+01
.998868E+01 .100000E+02

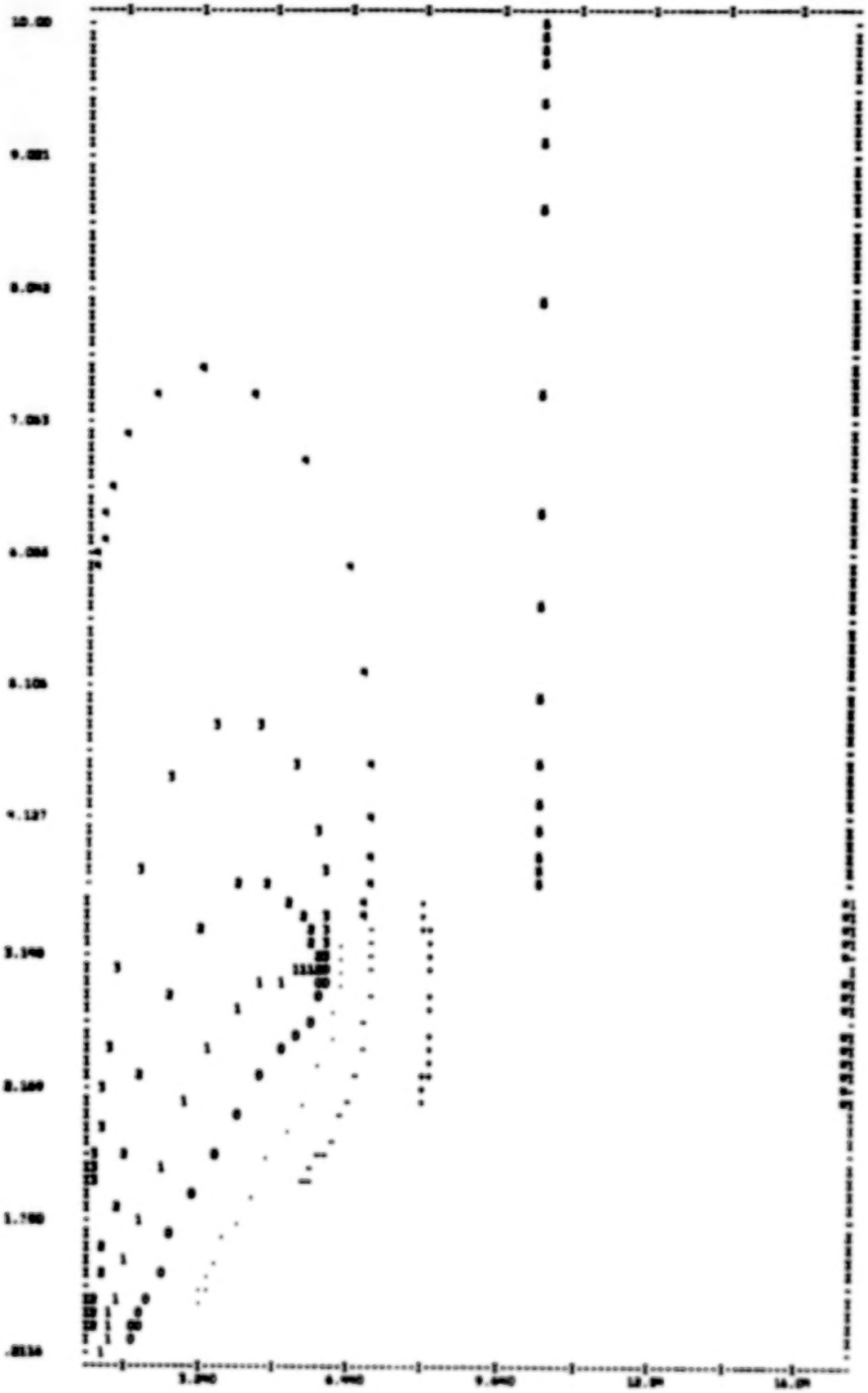
X S FOR CONSTANT XI LINE AT J= 46

.104200E+02 .104200E+02 .104200E+02 .104200E+02 .104200E+02 .104200E+02 .104200E+02 .104200E+02 .104200E+02 .104200E+02
.104200E+02 .104200E+02 .104200E+02 .104200E+02 .104200E+02 .104200E+02 .104200E+02 .104200E+02 .104200E+02 .104200E+02
.104200E+02 .104200E+02

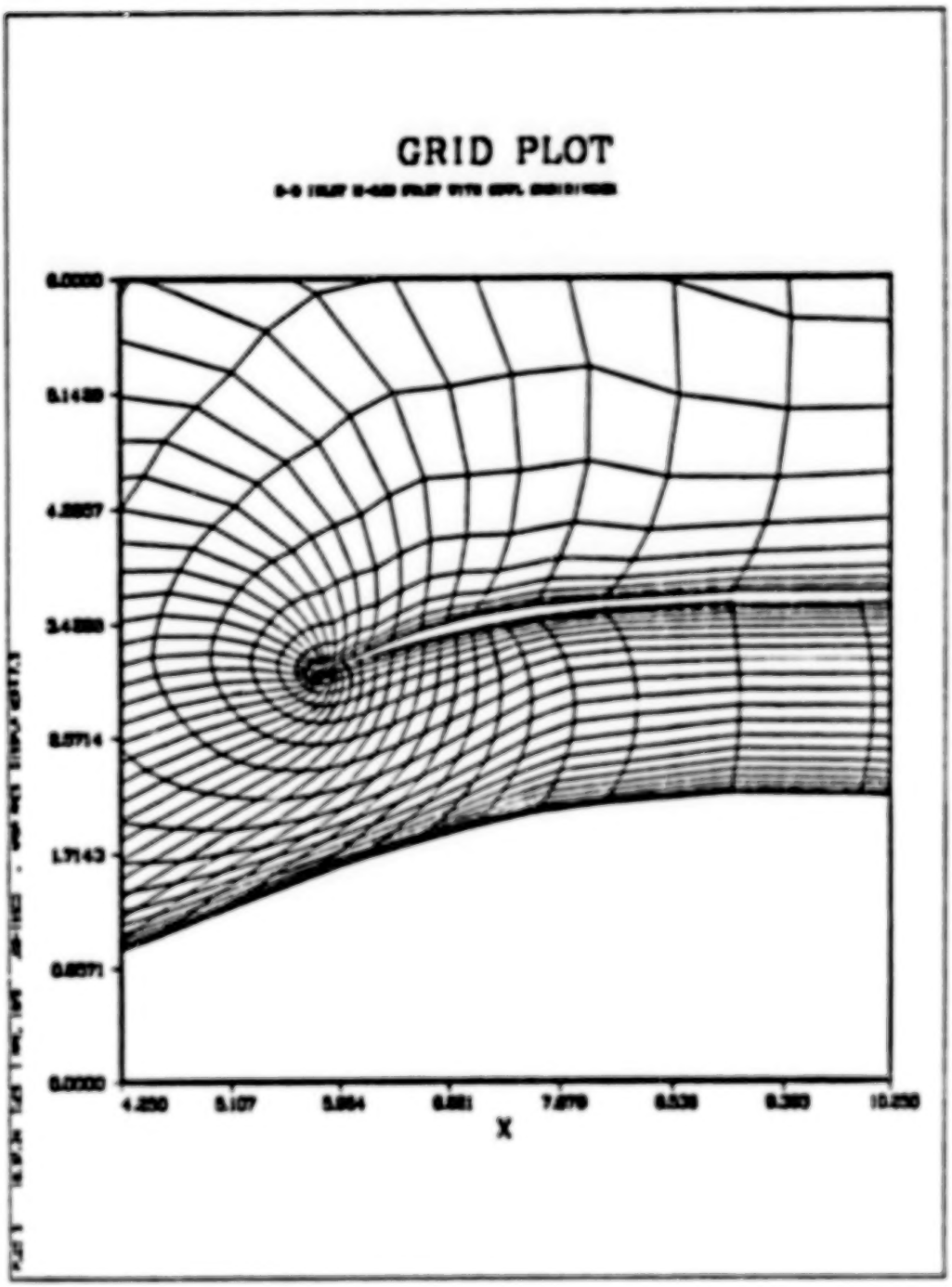
Y S FOR CONSTANT XI LINE AT J= 46

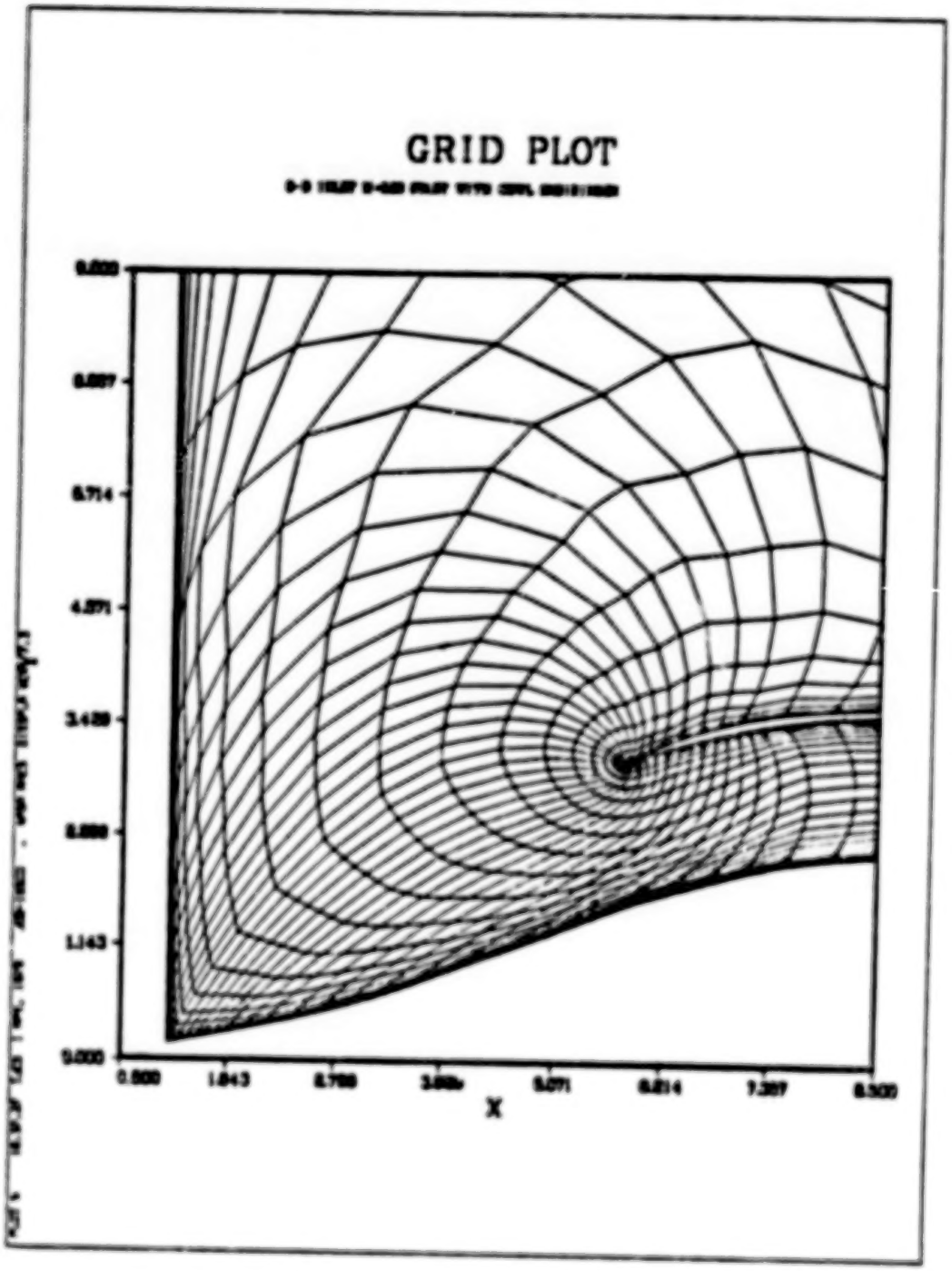
.368000E+01 .367000E+01 .370501E+01 .378571E+01 .384532E+01 .398664E+01 .420803E+01 .439267E+01 .448163E+01 .448679E+01
.641905E+01 .723097E+01 .799521E+01 .862847E+01 .910795E+01 .944197E+01 .966356E+01 .980468E+01 .989261E+01 .994699E+01
.998000E+01 .100000E+02

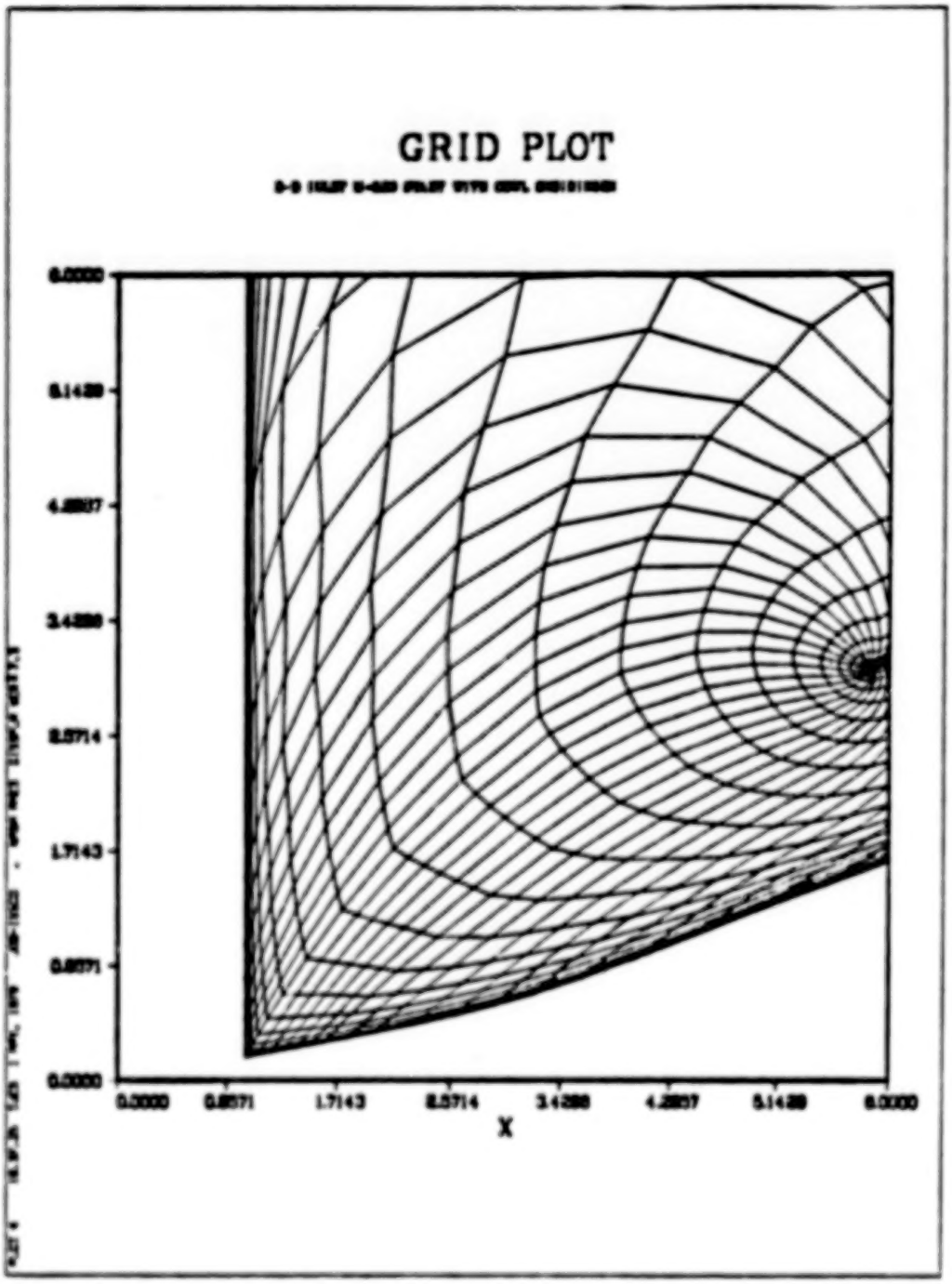




3.3 Plots of the Generated Mesh




GRID PLOT
X


GRID PLOT
0.0000
5.1429
4.2857
3.4286
2.5714
1.7143
0.8571
0.0000
0.0000
0.8571
1.7143
2.5714
3.4286
4.2857
5.1429
6.0000
X

REFERENCES

1. Steger, J. L.: Implicit Finite Difference Simulation of Flow About Arbitrary Geometries With Application to Airfoils. AIAA Paper 77-665, AIAA 10th Fluid and Plasma Dynamics Conference, Albuquerque, New Mexico, June 27-29, 1977.

2. Sorenson, R. L.; and Steger, J. L.: Simplified Clustering of Nonorthogonal Grids Generated by Elliptic Partial Differential Equations. NASA TM-73252, 1977.

3. Thames, F. C.; Thompson, J. F.; and Mastin, C. W.: Numerical Solution of the Navier-Stokes Equations for Arbitrary Two-Dimensional Airfoils. NASA SP-347, 1975, pt. 4, pp. 469-530.

4. Biringen, S. H.; and McMillan, O. J.: Calculation of Two-Dimensional Inlet Flow Fields in a Supersonic Free Stream by an Implicit Marching Code With Nonorthogonal Mesh Generation - User's Manual. NASA CR-3222, 1980.

5. Staff of Ames Research Center: Equations, Tables and Charts for Compressible Flow. NACA Report R-1135, 1953.

APPENDIX A

SOURCE LISTING OF THE 2-D INLET CALCULATION PROGRAM

```
PROGRAM CODE1      76/76   OPT=2 TRACE                FTN 4.6-460      01/09/80  11.58.39      PAGE     1

      1               PROGRAM CODE1(INPUT,OUTPUT,TAPE5=INPUT,TAPE6=OUTPUT,TAPE3,TAPE4,      IMPLI      2
                     1 TAPE8,TAPE48)                                                        IMPLI      3
                      COMMON/BASE/NMAX,JMAX,KMAX,JM,KM,DT,FSMACH,EPS,GAMMA,GAMI,SMU,HO,     BASE       2
                     1  FV(4),FD(4),RE,PI,Z(80),NP,METH,ALPHA,INVIS,IPLOT,RESID            BASE       3
      5              2, CNBR,IPEGO,ISTORE,NF,NB,JTAIL1,JTAIL2,IOSCIL,XOSCIL,IUPWND         BASE       4
                     3 , LAMIN,SMUIM,VARA,VARB,VARC                                         BASE       5
                      COMMON/VARS/ Q(78,36,4),XY(78,36,4),P(78,36)                          VARS       2
                      COMMON/LARGE/X(78,36),Y(78,36),S(78,36,4),XIT(78,36),ETT(78,36)       VARS       3
                      LEVEL 2,X,Y,S,XIT,ETT                                                 VARS       4
     10               COMMON/BTRID/ A(80,4,4),B(80,4,4),C(80,4,4),D(80,4,4),DU(80,4,4),     IMPLI      6
                     1   F(80,4)                                                            IMPLI      7
                      DIMENSION XP(78,20),YP(78,20),NR(20)                                  INLET      1
                      COMMON/ZAM/NTIME                                                      INLET      2
                C                                                                           IMPLI      8
     15         C   INITIALIZE VARIABLES                                                   IMPLI      9
                C                                                                           IMPLI     10
                      CALL INITIA                                                           IMPLI     11
                      CALL EIGEN(0)                                                         INLET      3
                C   PRINTER MAP OF JACOBIAN                                               IMPLI     12
     20               IF( IPLOT .LE. 0) IPLOT = 4*NMAX                                      IMPLI     13
                      CALL MAP(JMAX,KMAX,P)                                                 IMPLI     14
                      CALL OUTPT(1,0)                                                       IMPLI     15
                      N =0                                                                  IMPLI     16
                      NTIME=N                                                               INLET      4
     25         C   CFD COMMON OUTPUT ROUTINE                                             IMPLI     17
                      EINF =  5*FSMACH**2 + 1 /( GAMMA*GAMI)                                IMPLI     18
                      CALL HARVI(Q(1,1,1),Q(1,1,2),Q(1,1,3),Q(1,1,4),P,X,Y,S,XY,XY(1,1,     IMPLI     19
                     1 2),S(1,1,2),XY(1,1,3),XY(1,1,4),1 /GAMMA,1 ,FSMACH,EINF,N*DT,DT      IMPLI     20
                     2 ,GAMMA,JMAX,KMAX,78,2)                                               IMPLI     21
     30         C   INITIALIZE PLOT ROUTINE                                               IMPLI     22
                      IF(IPLOT .LE. NMAX) CALL READIN                                       IMPLI     23
                C.....  THIS VARIABLE IS NOW CALCULATED IN EIGEN                           INLET      5
                C     HO=0.5*DT                                                           INLET      6
                C                                                                         IMPLI     25
     35         C   MAIN LOOP                                                            IMPLI     26
                      DO 10 N=1,NMAX                                                        IMPLI     27
                      NTIME=N                                                               INLET      7
                      CALL STEP                                                             IMPLI     28
                C   OUTPUT DIAGNOSTICS, HERE TO END OF LOOP 10                            IMPLI     29
     40               IF(N-(N/25)*25   EQ  0)CALL CLCD(0)                                   INLET      8
                      IF((N-(N/20)*20) EQ 0)CALL EIGEN(N)                                   INLET      9
                      IF((N-(N/100)*100)  EQ  0)GO TO 5                                     INLET     10
                      JL = JMAX/2                                                           IMPLI     32
                      SHEAR = ((Q(JL,2,2)/Q(JL,2,1)) -(Q(JL,1,2)/Q(JL,1,1)))*XY(JL,1,4)     IMPLI     33
     45               WRITE(6,601) ( Q(JL,2,M), M=1,4), SHEAR,RESID                         IMPLI     34
                 5    CONTINUE                                                              INLET     11
                      IF( N - (N/IPLOT)*IPLOT  EQ  0) CALL CPPLOT                           IMPLI     35
                      IF(N-(N/NP)*NP) 40,40,41                                              IMPLI     36
                C                                                                         IMPLI     37
     50         C   OPTION TO PRINTER MAP PRESSURE   STORE IN JACOBIAN LOCATION,MAP,      IMPLI     38
                C    AND RECOMPUTE JACOBIAN AND PLACE IN P ARRAY                          IMPLI     39
                   40 DO 20 J = 1,JMAX                                                      IMPLI     40
                      DO 20 K = 1,KMAX                                                      IMPLI     41
                      PP=GAMMA*GAMI*(Q(J,K,4)- 5*(Q(J,K,2)**2+Q(J,K,3)**2)/Q(J,K,1))        IMPLI     42
     55            20 P(J,K) = PP*P(J,K)                                                  IMPLI     43
                      CALL MAP(JMAX,KMAX,P)                                                 IMPLI     44
                      CALL XYMETS                                                           IMPLI     45
```

```
                CC=2./GAMMA/FSMACH**2                                          INLET    12
                IOPT=4                                                         INLET    13
     60         LWID=50                                                        INLET    14
                LENG=50                                                        INLET    15
                NOP=78                                                         INLET    16
                NC=1                                                           INLET    17
                J1=JTAIL1                                                      INLET    18
     65         J2=JTAIL2                                                      INLET    19
                J3=34                                                          INLET    20
                J3P1=J3+1                                                      INLET    21
                NR(1)=J3-J1+1                                                  INLET    22
                K=KMAX                                                         INLET    23
     70         I=0                                                            INLET    24
                DO 50 J=J1,J3                                                  INLET    25
                PP=P(J,K)+GAMMA*GAMI*(Q(J,K,4)-.5*(Q(J,K,2)**2+Q(J,K,3)**2)/   INLET    26
               *Q(J,K,1))                                                      INLET    27
                I=I+1                                                          INLET    28
     75         XP(I,1)=X(J,K)                                                 INLET    29
                YP(I,1)=CC*PP-CC                                               INLET    30
           50   CONTINUE                                                       INLET    31
                CALL PLOTA2(XP,YP,IOPT,NR,NOP,NC,LWID,LENG)                    INLET    32
                K=1                                                            INLET    33
     80         NR(1)=J3P1-J1+1                                                INLET    34
                I=0                                                            INLET    35
                DO 55 J=J1,J3P1                                                INLET    36
                PP=P(J,K)+GAMMA*GAMI*(Q(J,K,4)-.5*(Q(J,K,2)**2+Q(J,K,3)**2)/   INLET    37
               *Q(J,K,1))                                                      INLET    38
     85         I=I+1                                                          INLET    39
                XP(I,1)=X(J,K)                                                 INLET    40
                YP(I,1)=CC*PP-CC                                               INLET    41
           55   CONTINUE                                                       INLET    42
                CALL PLOTA2(XP,YP,IOPT,NR,NOP,NC,LWID,LENG)                    INLET    43
     90      41 CONTINUE                                                       IMPLI    46
            601 FORMAT(1H ,6E15.7)                                             IMPLI    47
             10 CONTINUE                                                       IMPLI    48
           C   FINAL OUTPUT                                                   IMPLI    49
                N = NMAX                                                       IMPLI    50
     95         CALL HARVIO(Q(1,1,1),Q(1,1,2),Q(1,1,3),Q(1,1,4),P,X,Y,S,XY,XY(1,1,   IMPLI    51
               1),S(1,1,2),XY(1,1,3),XY(1,1,4),1 /GAMMA,1 ,FSMACH,EINF,N*DT,DT      IMPLI    52
               2 ,GAMMA,JMAX,KMAX,78,2)                                        IMPLI    53
           C                                                                   IMPLI    54
           C  UNSCALE BY JACOBIAN                                              IMPLI    55
    100         DO 45 N=1,4                                                    IMPLI    56
                DO 45 K=1,KMAX                                                 IMPLI    57
                DO 45 J=1,JMAX                                                 IMPLI    58
           45   Q(J,K,N) = Q(J,K,N)*P(J,K)                                     IMPLI    59
                CALL OUTPT(1,1)                                                IMPLI    60
    105         CALL OUTPT(KMAX,1)                                             INLET    44
           C   OPTIONAL STORE OF SOLUTION DATA                                 IMPLI    61
                IF( ISTORE GT 0) WRITE(4)(((Q(J,K,M),J=1,JMAX),K=1,KMAX),M=1,4)   IMPLI    62
                CALL CLCD(1)                                                   IMPLI    63
           C                                                                   IMPLI    64
    110         IF(IPLOT  LE NMAX) CALL EOFTV                                  IMPLI    65
                STOP                                                           IMPLI    66
                END                                                            IMPLI    67
```

```
SUBROUTINE INITIA     76/76  OPT=2 TRACE                FTN 4.6-460        01/09/80  11.58.39       PAGE     1

                      SUBROUTINE INITIA                                                    INITIA     2
                      COMMON/BASE/NMAX,JMAX,KMAX,JM,KM,DT,FSMACH,EPS,GAMMA,GAMI,SMU,HD,    BASE       2
                     1  FV(4),FD(4),RE,PI,Z(80),NP,METH,ALPHA,INVIS,IPLOT,RESID           BASE       3
                     2  CNBR,IREGO,ISTORE,NF,NB,JTAIL1,JTAIL2,IOSCIL,XOSCIL,IUPWND        BASE       4
                     3  LAMIN,SMUIM,VARA,VARB,VARC                                       BASE       5
                      COMMON/VARS/ Q(78,36,4),XY(78,36,4),P(78,36)                         VARS       2
                      COMMON/LARGE/X(78,36),Y(78,36),S(78,36,4),XIT(78,36),ETT(78,36)      VARS       3
                      LEVEL 2,X,Y,S,XIT,ETT                                                VARS       4
                      COMMON/ARRAY/ ALPX(80),ALPY(80),BETX(80),BETY(80)                    INITIA     5
                      COMMON/UPWND/EB(80),EF(80)                                           INITIA     6
                      DATA EB,EF/80*0 ,80*0 /                                              INITIA     7
                C                                                                          INITIA     8
                      PI=3 14159265                                                        INITIA     9
                C****THIS SUBROUTINE READS FLOW PARAMETERS AND THE INITIAL FIELD           INLET     45
                C****FIRST INPUT CARD (7I5)                                              INLET     46
                C     NMAX  MAX NO  OF TIME STEPS                                        INLET     47
                C     JMAX  MAX NO  OF POINTS IN XI-DIRECTION                            INLET     48
                C     KMAX  MAX NO  OF POINTS IN ETA DIRECTION                           INLET     49
                C     NP  NUMBER OF TIME-STEPS FOR CALLING MAP ROUTINE                   INLET     50
                C     METH  IF METH GREATER THAN 0  SKIPS UPWIND FIFF                    INLET     51
                C     IREAD  IF IREAD GR  THAN 0,  READS GRID FROM DISC                  INLET     52
                C     INVIS  IF INVIS GR  THAN 0 ACCOUNTS FOR VISCOUS EFFECTS            INLET     53
                C****SECOND INPUT CARD (7I5)                                             INLET     54
                C     IREGO  IF IREGO GR  THAN 0,  READS INITIAL FIELD FROM DISC         INLET     55
                C            OTHERWISE STARTS WITH FREE STERAM CONDITIONS                INLET     56
                C     ISTORE  IF ISTORE GR THAN 0,  SOLUTION DATA STORED ON DISC         INLET     57
                C     NF                                                                 INLET     58
                C     NB                                                                 INLET     59
                C     JTAIL1  FIRST INTERIOR POINT,  SET TO 1                            INLET     60
                C     JTAIL2  LAST XI-INTERIOR POINT ,  SET TO JMAX-1                    INLET     61
                C     IPLOT  INDEX FOR CALLING CPPLOT ROUTUNE                            INLET     62
                C****THIRD INPUT CARD (3I5)                                              INLET     63
                C     IUPWIND  IF IUPWIND GR THAN 0 SKIPS UPWIND DIFFERENCING            INLET     64
                C     IOSCIL  FOR STATIONARY AIRFOIL SET TO 0                            INLET     65
                C     LAMIN  IF LAMIN GR  THAN ZERO OR LAMIN=0,  CALCULATES TURB  VISCOSIT INLET     66
                C****FOURTH DATA CARD (8F10 0)                                           INLET     67
                C     CNBR  COURANT NO  SET TO ABOUT 10                                  INLET     68
                C     DX  USED IN GRID SUBROUTINE  IF GRID READ FROM DISC SET DX=0       INLET     69
                C     DY  USED IN GRID SUBROUTINE  AS ABOVE                              INLET     70
                C     FSMACH  FREE STREAM MACH NUMBER                                    INLET     71
                C     SMU PSEUDO VISCOSITY COEFFICIENT  FOR CNBR ABOUT 10 SET TO 0 1     INLET     72
                C     EPS  USED IN GRID SUBROUTINE  SET TO ZERO                          INLET     73
                C     RE  REYNOLDS NUMBER                                                INLET     74
                C     ALPHA  ANGLE OF ATTACK                                             INLET     75
                C****FIFTH DATA CARD (8F10 0)                                            INLET     76
                C     XOSCIL,  VARA,VARB,VARC  -  VARIABLES REQUIRED FOR OSCILLATING AIRFOIL INLET     77
                C                 SET TO ZERO                                          INLET     78
                      READ(5,100) NMAX,JMAX,KMAX,NP,METH,IREAD,INVIS                     INITIA    10
                      READ(5,100) IREGO,ISTORE,NF,NB,JTAIL1,JTAIL2,IPLOT                 INITIA    11
                      READ(5,100) IUPWND,IOSCIL,LAMIN                                    INITIA    12
                      READ(5,101)CNBR,DX,DY,FSMACH,SMU,EPS,RE,ALPHA                      INLET     79
                      READ(5,101) XOSCIL,VARA,VARB,VARC                                  INITIA    14
                C     STHETA IS SHOCK ANGLE IN DEGREES                                   INLET     80
                      STHETA=38                                                          INLET     81
                      IF( FSMACH  GT 1 0) IUPWND = 1                                     INITIA    15
                  100 FORMAT(8I5)                                                        INITIA    16
                  101 FORMAT(8F10 0)                                                     INITIA    17
```

```
      WRITE(6,600) NMAX,JMAX,KMAX,NP,METH,IREAD,INVIS                    INITIA  18
  600 FORMAT(1H1, 39H NMAX,JMAX, KMAX NP METH IREAD INVIS      ,8I6)     INITIA  19
      WRITE(6,601) IREGD,ISTORE,NF,NB,JTAIL1,JTAIL2,IPLOT                INITIA  20
  601 FORMAT(1HO, 39H IREGD ISTORE NF NB JTAIL1 JTAIL2 IPLOT       ,8I6)  INITIA  21
      WRITE(6,603) IUPWND,IOSCIL,LAMIN                                   INITIA  22
  603 FORMAT(1HO, 22H IUPWND IOSCIL LAMIN      ,8I6)                     INITIA  23
      WRITE(6,602)CNER,FSMACH,SMU,EPS,RE,ALPHA                           INLET   82
  602 FORMAT(1HO,3GH CNER,FSMACH SMU,EPS,RE,ALPHA        ,/,8F15.10)     INLET   83
      WRITE(6,604) XOSCIL                                                INITIA  26
  604 FORMAT(1HO, 20H XOSCIL                    ,/,4E15.6)               INITIA  27
C                                                                        INITIA  28
C      COMPUTE VARIOUS CONSTANTS                                         INITIA  29
C      RESCALE RE FOR SPEED OF SOUND REFERENCE NUMBER                    INITIA  30
      RE = RE/FSMACH                                                     INITIA  31
      GAMMA = 1.4                                                        INITIA  32
      GAMI = GAMMA -1                                                    INITIA  33
      RESID = 0                                                          INITIA  35
C     SMUIM IS THE IMPLICIT PORTION OF PSEUDO VISCOSITY                  INLET   84
      SMUIM=3.2*SMU                                                      INLET   85
      JM = JMAX-1                                                        INITIA  37
      KM = KMAX-1                                                        INITIA  38
      COSANG = COS( PI*ALPHA/180.)                                       INITIA  39
      SINANG = SIN(PI*ALPHA/180.)                                        INITIA  40
C     LOAD FREE STREAM AT ANGLE OF ATTACK ALPHA                          INITIA  41
      DO 20 J=1,JMAX                                                     INITIA  42
      DO 20 K=1,KMAX                                                     INITIA  43
      Q(J,K,1) = 1.                                                      INITIA  44
      Q(J,K,2) = FSMACH*COSANG                                           INITIA  45
      Q(J,K,3) = FSMACH*SINANG                                           INITIA  46
      Q(J,K,4) = 1./(GAMMA*GAMI) + .5*FSMACH**2                          INITIA  47
C      ZERO OUT XIT AND ETAT                                             INITIA  48
      XIT(J,K) = 0.                                                      INITIA  49
      ETT(J,K) = 0.                                                      INITIA  50
      DO 21 N=1,4                                                        INITIA  51
   21 S(J,K,N) = 0.                                                      INITIA  52
   20 CONTINUE                                                           INITIA  53
C    INITIALIZE THE FIELD BY CAPTURING THE FIRST SHOCK AT  THE RAMP      INLET   86
C    VALUES FROM 2-D WEDGE THEORY                                        INLET   87
C    CALCULATION OF FIELD VARIABLES                                      INLET   88
      STHETA=STHETA*3.1415926/180.                                       INLET   89
         FAC1=FSMACH*FSMACH*(SINISTHETA)**2                              INLET   90
      FAC2=(FAC1-1.)*.5 /(.6 *FSMACH**2)                                 INLET   91
      Q1=(1. -FAC2)*FSMACH                                               INLET   92
      Q2=(FAC2*COSISTHETA)/SINISTHETA))*FSMACH                           INLET   93
      Q3=(.6 *FAC1)/(FAC1+5.)                                            INLET   94
      Q4=(1.7 *FAC1-1.)/.6                                               INLET   95
      Q4=Q4* .71429/ 4.                                                  INLET   96
      FAC3=Q1*Q1-Q2*Q2                                                   INLET   97
      FAC3=FAC3*Q3* .5                                                   INLET   98
      Q4=Q4+FAC3                                                         INLET   99
      K=KMAX                                                             INLET  100
      DO 31 J=35,40                                                      INLET  101
      Q(J,K,1)=Q3                                                        INLET  102
      Q(J,K,2)=Q1*Q3                                                     INLET  103
      Q(J,K,3)=Q2*Q3                                                     INLET  104
      Q(J,K,4)=Q4                                                        INLET  105
   31 CONTINUE                                                           INLET  106
```

```
      Q5=Q1+Q3                                                          INLET  107
      Q6=Q2+Q3                                                          INLET  108
      WRITE(6,50)Q5,Q6,Q3,Q4                                            INLET  109
   50 FORMAT(10X,*U,V,RHO,EN=*,4E12.5)                                  INLET  110
C                                                                       INITIA  54
C     RESTART CAPABILITY    READ VARIABLES FROM DISC, OVERLOADING FREE   INITIA  55
C     STREAM, ALL OTHER QUANTITIES COMPUTED AS IF INITIAL START UP       INITIA  56
      IF( IREQD .GT. 0) READ(3)(((Q(J,K,M),J=1,JMAX),K=1,KMAX),M=1,4)   INITIA  57
      CALL GRID(IREAD,DX,DY)                                            INITIA  58
      CALL XYMETS                                                       INITIA  59
C                                                                       INITIA  60
C     SCALE VARIABLES BY JACOBIAN STORED BY XYMETS IN P(J,K)            INITIA  61
      DO 10 N=1,4                                                       INITIA  62
      DO 10 K=1,KMAX                                                    INITIA  63
      DO 10 J=1,JMAX                                                    INITIA  64
   10 Q(J,K,N) = Q(J,K,N)/P(J,K)                                        INITIA  65
C                                                                       INITIA  66
      WRITE(6,610) ( Y(1,K), K=1,KMAX)                                  INITIA  67
  610 FORMAT(1H , 6F13.5)                                               INITIA  68
      DO 40 J=1,JMAX                                                    INITIA  69
      ALPX(J) = 0                                                       INITIA  70
   40 BETX(J) = 1                                                       INITIA  71
      DO 42 K=1,KMAX                                                    INITIA  72
      ALPY(K) = 0                                                       INITIA  73
   42 BETY(K) = 1.                                                      INITIA  74
      RETURN                                                            INITIA  75
      END                                                               INITIA  76
```

```
      SUBROUTINE GRID(IREAD,DX,DY)                                      GRID      2
      COMMON/BASE/KMAX,JMAX,KMAX,JM,KM,DT,FSMACH,EPS,GAMMA,GAMI,SRU,HO, BASE      2
     1  FV(4),FD(4),RE,PI,Z(80),NP,METH,ALPHA,INVIS,IPLOT,RESID         BASE      3
     2, CNDR,IREGD,ISTORE,NF,ND,JTAIL1,JTAIL2,IDISC1L,KDISC1L,IUPWND   BASE      4
     3  ,LAMIN,SRUIM,VARA,VARB,VARC                                    BASE      5
      COMMON/VARS/ Q(78,36,4),XY(78,36,4),IP(78,36)                     VARS      2
      COMMON/LARGE/X(78,36),Y(78,36),S(78,36,4),XIT(78,36),ETT(78,36)   VARS      3
      LE(EL,2),X,Y,S,XIT,ETT                                            VARS      4
C                                                                       GRID      5
C     EITHER COMPUTE A SIMPLE STRETCHED GRID FOR FLAT PLATE, OR         GRID      6
C      IF IREAD GT  0, READ GENERAL GRID OFF FROM DISC STORE            GRID      7
C                                                                       GRID      8
C    WEDGE FLOW                                                         GRID      9
      ALP =15                                                           GRID     10
      TANT =  TAN(ALP*PI/180) )                                         GRID     11
      IF( IREAD  GT 0) GO TO 19                                         GRID     12
      DO 9 K=1,KMAX                                                     GRID     13
      X(1,K) = 0                                                        GRID     14
      DO 10 J=2,JMAX                                                    GRID     15
   10 X(J,K) = X(J-1,K) + DX                                            GRID     16
    9 CONTINUE                                                          GRID     17
      DO 12 J=1,JMAX                                                    GRID     18
      Y(J,1) = 0                                                        GRID     19
      JWEDG = JMAX/2                                                    GRID     20
      IF( J GT JWEDG) Y(J,1) = Y(J-1,1) + DX*TANT                       GRID     21
      DS = DY                                                           GRID     22
      EPP = EPS                                                         GRID     23
      DO 13 K=2,KMAX                                                    GRID     24
      KCMAX =  8+KMAX                                                   GRID     25
      IF( K GT KCMAX) EPP = 0                                           GRID     26
      DS = DS*( 1  +EPP*( SIN((K-2)*PI/(KCMAX-1))))                     GRID     27
   13 Y(J,K) = Y(J,K-1) + DS                                            GRID     28
   12 CONTINUE                                                          GRID     29
      GO TO 20                                                          GRID     30
C                                                                       GRID     31
   19 READ(8)((X(J,K),J=1,JMAX),K=1,KMAX),((Y(J,K),J=1,JMAX),K=1,KMAX)  GRID     32
   20 CONTINUE                                                          GRID     33
      RETURN                                                            GRID     34
      END                                                               GRID     35
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SUBROUTINE OUTPT      76/76   OPT=2 TRACE                FTN 4.6-460        01/03/80  11.58.39      PAGE     1

      1               SUBROUTINE OUTPT(K,NSCAL)                                                    OUTPT      2
                      COMMON/BASE/NMAX,JMAX,KMAX,JM,KM,DT,FSMACH,EPS,GAMMA,GAMI,SMU,HO,            BASE       2
                     1  FV(4),FD(4),RE,PI,Z(80),NP,METH,ALPHA,INVIS,IPLOT,RESID                   BASE       3
                     2,  ONBR,IREGO,ISTORE,NF,NB,JTAIL1,JTAIL2,IOSCIL,NOSCIL,IUPWND               BASE       4
      5              3  ,  LAMIN,SMUIM,VARA,VARB,VARC                                             BASE       5
                      COMMON/VARS/ Q(78,36,4),XY(78,36,4),P(78),36)                                VARS       2
                      COMMON/LARGE/X(78,36),Y(78,36),S(78,36,4),XIT(78,36),ETT(78,36)              VARS       3
                      LEVEL 2,X,Y,S,XIT,ETT                                                        VARS       4
                    C****OUTPUTS THE NONDIM  VARIABLES AND P/PST AT K                              INLET    111
     10               WRITE(6,600) K                                                               OUTPT      6
                  600 FORMAT(1H1,  32H J,X,Y,(Q  ,N=1,4),  P/PST AT K =       ,I5)                OUTPT      7
                      PT = (1 + 5*GAMI*FSMACH**2)                                                  OUTPT      8
                      GG = GAMMA/GAMI                                                              OUTPT      9
                      PT = 1 /(PT**GG)                                                             OUTPT     10
     15               DO 10 J=1,JMAX                                                               OUTPT     11
                      PP= GAMMA*GAMI*( Q(J,K,4) - 5*(Q(J,K,2)**2+Q(J,K,3)**2)/Q(J,K,1))            OUTPT     12
                      PP = PP*PT                                                                   OUTPT     13
                      R = 1                                                                        OUTPT     14
                      IF( NSCAL) 15,15,16                                                          OUTPT     15
     20               15 RD = P(J,K)                                                               OUTPT     16
                      16 CONTINUE                                                                  OUTPT     17
                      Q1 = Q(J,K,1)*RD                                                             OUTPT     18
                      Q2 = Q(J,K,2)*RD                                                             OUTPT     19
                      Q3 = Q(J,K,3)*RD                                                             OUTPT     20
     25               Q4 = Q(J,K,4)*RD                                                             OUTPT     21
                      PP = PP*RD                                                                   OUTPT     22
                      WRITE(6,601) J,X(J,K),Y(J,K),Q1,Q2,Q3,Q4,PP                                  OUTPT     23
                  601 FORMAT(1H , I5,7E13.5)                                                       OUTPT     24
                      10 CONTINUE                                                                  OUTPT     25
     30               RETURN                                                                       OUTPT     26
                      END                                                                          OUTPT     27
```

```
      SUBROUTINE XYMETS                                                 XYMETS     2
      COMMON/ZAM/NTIME                                                  INLET    112
      COMMON/BASE/NMAX,JMAX,KMAX,JM,KM,DT,FSMACH,EPS,GAMMA,GAMI,SRU,HO, BASE      2
     1  FV(4),FD(4),RE,PI,Z(80),NP,METH,ALPHA,INVIS,IPLOT,RESID         BASE      3
     2, CNBR,IREGO,ISTORE,NF,NB,JTAIL1,JTAIL2,IOSCIL,XOSCIL,IUPWND     BASE      4
     3  ,LAMIN,SMUIM,VARA,VARB,VARC                                    BASE      5
      COMMON/VARS/ Q(78,36,4),XY(78,36,4),P(78,36)                      VARS      2
      COMMON/LARGE/X(78,36),Y(78,36),S(78,36,4),XIT(78,36),ETT(78,36)   VARS      3
      LEVEL 2,X,Y,S,XIT,ETT                                             VARS      4
C****THIS SUBROUTINE CALCULATES THE METRIC COEFFICIENTS ACCORDING TO     INLET    113
C     THE GRID SYSTEM FORMS THE JACOBIAN                                INLET    114
C     XY4=DX/DXI, XY3=DY/DXI                                            INLET    115
      DO 11 K=1,KMAX                                                    XYMETS     6
      DO 10 J=2,JM                                                      XYMETS     7
      XY(J,K,4) = .5*( X(J+1,K) - X(J-1,K))*.5                          XYMETS     8
   10 XY(J,K,3) = .5*( Y(J+1,K) - Y(J-1,K))*.5                          XYMETS     9
      XY(1,K,4) = .5*(-3.*X(1,K) +4.*X(2,K) - X(3,K))                   XYMETS    10
      XY(1,K,3) = .5*(-3.*Y(1,K) +4.*Y(2,K) - Y(3,K))                   XYMETS    11
      XY(JMAX,K,4) = .5*( 3.*X(JMAX,K) -4.*X(JM,K)+X(JM-1,K))*.5        XYMETS    12
      XY(JMAX,K,3) = .5*( 3.*Y(JMAX,K) -4.*Y(JM,K) + Y(JM-1,K))*.5      XYMETS    13
   11 CONTINUE                                                          XYMETS    14
C    XY2=DX/DETA, XY1=DY/DETA                                           INLET    116
      DO 21 J=1,JMAX                                                    XYMETS    16
      DO 20 K=2,KM                                                      XYMETS    17
      XY(J,K,2) = .5*( X(J,K+1) - X(J,K-1))*.5                          XYMETS    18
   20 XY(J,K,1) = .5*( Y(J,K+1) - Y(J,K-1))*.5                          XYMETS    19
      XY(J,1,2) = .5*(-3.*X(J,1) +4.*X(J,2) - X(J,3))*.5                XYMETS    20
      XY(J,1,1) = .5*(-3.*Y(J,1) +4.*Y(J,2) -Y(J,3))*.5                 XYMETS    21
      XY(J,KMAX,2) = .5*( 3.*X(J,KMAX) -4.*X(J,KM) +X(J,KM-1))*.5       XYMETS    22
      XY(J,KMAX,1) = .5*( 3.*Y(J,KMAX) -4.*Y(J,KM) + Y(J,KM-1))*.5      XYMETS    23
   21 CONTINUE                                                          XYMETS    24
C   A SPATIALLY AVERAGED JACOBIAN IS NECESSARY FOR TIME ACCURATE FLOW    XYMETS    25
      DO 30 J=1,JMAX                                                    XYMETS    26
      JP = J + 1                                                        XYMETS    27
      JR = J -1                                                         XYMETS    28
      IF( J .EQ. 1 .OR. J .EQ. JMAX) JP = JR = J                        XYMETS    29
      DO 30 K=1,KMAX                                                    XYMETS    30
      KP = K +1                                                         XYMETS    31
      KR = K -1                                                         XYMETS    32
      IF( K .EQ. 1 .OR. K .EQ. KMAX) KP = KR = K                        XYMETS    33
      DINV = 4./( (XY(J,KP,4) * XY(J,KR,4))*(XY(JP,K,1)-XY(JR,K,1))    XYMETS    34
     1  - (XY(J,KP,3)* XY(J,KR,3))*(XY(JP,K,2)- XY(JR,K,2)))           XYMETS    35
C.....  THIS IS A NON SPATIALLY AVERAGED JACOBIAN SINCE SOLUTION  IS TO B INLET    117
C       A STEADY STATE ANSWER                                           INLET    118
      DINV=1./(XY(J,K,4)*XY(J,K,1)-XY(J,K,2)*XY(J,K,3))                 INLET    119
      P(J,K) = DINV                                                     XYMETS    36
   30 CONTINUE                                                          XYMETS    37
      DO 32 J=1,JMAX                                                    XYMETS    38
      DO 32 K=1,KMAX                                                    XYMETS    39
      DINV = P(J,K)                                                     XYMETS    40
C P(J,K) IS THE JACOBIAN  XY1=DXI/DX, XY2=DXI/DY,                       INLET    120
C    XY3=DETA/DX, XY4=DETA/DY                                           INLET    121
      XY(J,K,1) = XY(J,K,1)*DINV                                        XYMETS    42
      XY(J,K,2) = - XY(J,K,2)*DINV                                      XYMETS    43
      XY(J,K,3) = - XY(J,K,3)*DINV                                      XYMETS    44
   32 XY(J,K,4) = XY(J,K,4)*DINV                                        XYMETS    45
      IF(NTIME.GT.1)GO TO 63                                            INLET    122
```

```
                      DO 64 K=1,KMAX                                    INLET   123
                      WRITE(6,101)K                                     INLET   124
60                    WRITE(6,102)(P(I,J,K),I,J=1,JMAX)                 INLET   125
                   64 CONTINUE                                          INLET   126
                   63 CONTINUE                                          INLET   127
                  101 FORMAT(1X,'K=',I5)                                INLET   128
                  102 FORMAT(1X,8E12.5)                                 INLET   129
65                    3 RETURN                                          XYMETS   46
                      END                                               XYMETS   47
```

```
      SUBROUTINE SMOOTH                                                 SMOOTH     2
      COMMON/BASE/NMAX,JMAX,KMAX,JM,KM,DT,FSMACH,EPS,GAMMA,GAMI,SMU,HO, BASE     2
     1  FV(4),FD(4),RE,PI,Z(80),NP,METH,ALPHA,INVIS,IPLOT,RESID         BASE     3
     2,  CNBR,IPEGO,ISTORE,NF,N0,JTAIL1,JTAIL2,IOSCIL,XOSCIL,IUPWND     BASE     4
     3,  LAMIN,SMUIM,VARA,VARB,VARC                                     BASE     5
      COMMON/VARS/ Q(78,36,4),XY(78,36,4),P(78,36)                      VARS     2
      COMMON/LARGE/X(78,36),Y(78,36),S(78,36,4),XIT(78,36),ETT(78,36)   VARS     3
      LEVEL 2,X,Y,S,XIT,ETT                                             VARS     4
      COMMON/BTRID/ A(80,4,4),B(80,4,4),C(80,4,4),D(80,4,4),DU(80,4,4), SMOOTH   5
     1   F(80,4)                                                        SMOOTH     6
      COMMON/UPWND/ EB(80),EF(80)                                       SMOOTH     7
C****THIS SUBROUTINE ADDS FOURTH -ORDER SMOOTHING IMPLICITLY TO THE     INLET    130
C     RHS  ADJACENT TO BOUNDARIES SECOND SECOND ORDER SMOOTHING         INLET    131
C     IS ADDED EXPLICITLY WITH 0.5 OF SMU                               INLET    132
C   FOURTH ORDER SMOOTHING, ADDED EXPLICITLY TO RHS                     SMOOTH     9
C   SECONT ORDER AT FRINGES WITH .5 OF SMU                              SMOOTH    10
      JMM = JM -1                                                       SMOOTH    11
      KMM = KM-1                                                        SMOOTH    12
      SDT = SMU*DT                                                      SMOOTH    13
C      XI DIRECTION SMOOTHING                                           SMOOTH    14
      DO 40 K=2,KM                                                      SMOOTH    15
      IF( IUPWND.GT.0 ) GO TO 49                                        SMOOTH    16
      DO 43 J=1,JMAX                                                    SMOOTH    17
      RINV = 1./Q(J,K,1)                                                SMOOTH    18
      U = XIT(J,K) = RINV*( XY(J,K,1)*Q(J,K,2)+ XY(J,K,2)*Q(J,K,3))     SMOOTH    19
      PP= GAMI*( Q(J,K,4) - .5*(Q(J,K,2)**2+Q(J,K,3)**2)*RINV)          SMOOTH    20
      CC = SQRT( GAMMA*PP*( XY(J,K,1)**2+XY(J,K,2)**2)*RINV)            SMOOTH    21
      UMC = U - CC                                                      SMOOTH    22
      UPC = U + CC                                                      SMOOTH    23
      EB(J) =  .5 * SIGN( .5,UMC)                                       SMOOTH    24
      EF(J) =  .5 * SIGN( .5,UPC)                                       SMOOTH    25
   43 CONTINUE                                                          SMOOTH    26
C     ADJUST SHOCK POINT OPERATOR                                       SMOOTH    27
      CALL SHKOP(2,JM)                                                  SMOOTH    28
   49 CONTINUE                                                          SMOOTH    29
      DO 42 N=1,4                                                       SMOOTH    30
      DO 41 J=1,JMAX                                                    SMOOTH    31
   41 Z(J) = P(J,K)*Q(J,K,N)                                            SMOOTH    32
      J = 2                                                             SMOOTH    33
      S(J,K,N) = S(J,K,N) - .5*SMU*(-Z(J-1) +2.*Z(J) -Z(J+1))/P(J,K)    SMOOTH    34
      J = JM                                                            SMOOTH    35
      S(J,K,N) = S(J,K,N) - .5*SMU*(-Z(J-1) +2.*Z(J) -Z(J+1))/P(J,K)    SMOOTH    36
      DO 42 J=3,JMM                                                     SMOOTH    37
      EP = 1.  - EB(J) - EF(J+1)                                        SMOOTH    38
      EM = 1.  - EB(J-1) - EF(J)                                        SMOOTH    39
      S(J,K,N) = S(J,K,N) - SMU*( EP*Z(J+2) - 3.*EP + EM)*Z(J+1) +      SMOOTH    40
     1  3.*(EP -EM)*Z(J) -(EP -3.*EM)*Z(J-1) + EM*Z(J-2)) /P(J,K)       SMOOTH    41
   42 CONTINUE                                                          SMOOTH    42
   40 CONTINUE                                                          SMOOTH    43
C                                                                       SMOOTH    44
C   ETA DIRECTION SMOOTHING                                             SMOOTH    45
      DO 50 J=2,JM                                                      SMOOTH    46
      DO 51 K=1,KMAX                                                    SMOOTH    47
   51 Z(K) = P(J,K)                                                     SMOOTH    48
      DO 52 N=1,4                                                       SMOOTH    49
      K = KM                                                            SMOOTH    50
      S(J,K,N) = S(J,K,N) -SMU* .5*( -Z(K-1)+Q(J,K-1,N) +2.*Z(K)+Q(J,K,N) SMOOTH    51
```

```
                1 - Z(K-1)*Q(I,J,K-1,N1)/Z(K)                                    SMOOTH    52
                K = 2                                                            SMOOTH    53
60              S(I,J,K,N1) = S(I,J,K,N1) -SMU* 5*( -Z(K-1)*Q(I,J,K-1,N1) +2 *Z(K)*Q(I,J,K,N1) SMOOTH    54
                1 - Z(K-1)*Q(I,J,K-1,N1)/Z(K)                                    SMOOTH    55
                DO 52 K=3,KMM                                                    SMOOTH    56
52            S(I,J,K,N1) = S(I,J,K,N1) -SMU*( Z(K-2)*Q(I,J,K-2,N1) -Z(K-2)*Q(I,J,K-2,N1  SMOOTH    57
                1  +6 *Z(K)*Q(I,J,K,N1) -4 *( Z(K-1)*Q(I,J,K-1,N1) +Z(K-1)*Q(I,J,K-1,N1)) SMOOTH    58
65              2 / Z(K)                                                         SMOOTH    59
50            CONTINUE                                                           SMOOTH    60
                RETURN                                                           SMOOTH    61
                END                                                              SMOOTH    62
```

```
      SUBROUTINE BC                                                     BC        2
      COMMON/ZAMPA/INTSG                                                INLET   133
      COMMON/ZAM/INTIME                                                 INLET   134
      COMMON/IK1/JINPL                                                  INLET   135
      COMMON/BIR/NCRIT                                                  INLET   136
      COMMON/FINN/VV(50)                                                INLET   137
      LEVEL 2,VV                                                        INLET   138
      COMMON/BASE/NMAX,JMAX,KMAX,JM,KM,DT,FSMACH,EPS,GAMMA,GAM1,SRV,HD,  BASE    2
     1  FW(4),FD(4),RE,PI,Z(90),NP,METH,ALPHA,INVIS,IPLOT,RES(3)          BASE    3
     2,  CNBR,IREGD,ISTORE,NF,NB,JTAIL1,JTAIL2,IDSCIL,KDSCIL,IUPWND      BASE    4
     3,  LAMIN,SMUIM,VARA,VARB,VARC                                     BASE    5
      COMMON/VARS/ Q(78,36,4),XY(78,36,4),P(78,36)                      VARS    2
      COMMON/LARGE/X(78,36),Y(78,36),S(78,36,4),XIT(78,36),ETT(78,36)   VARS    3
      LEVEL 2,X,Y,S,XIT,ETT                                             VARS    4
      COMMON/AXI/JAXI                                                   INLET   139
      DIMENSION DETAS(80),DETAS1(80),A(80),B(80),C(80),F(80)            INLET   140
      DIMENSION UD(3,80),VD(3,80),EN(3,80),PP(3,80),DEN(3,80)           INLET   141
      DIMENSION VV(50)                                                  INLET   142
      DATA INIT/0/,D/                                                   BC        6
C****THIS SUBROUTINE EVALUATES BOUNDARY CONDITIONS AT THE SOLID WALLS AND INLET   143
C     INLOW-OUTFLOW SECTIONS                                            INLET   144
C     SET JINPL TO THE J-INDEX CORRESPONDING TO FIRST MESH ON RAMP      INLET   145
      IF( INIT .GT. 0) GO TO 9                                          BC        7
      READ(5,101)LFAC,JAXI                                              INLET   146
  101 FORMAT(2I2)                                                       INLET   147
C     IF LFAC=1 OUTFLOW IS SUBSONIC OTHERWISE SUPERSONIC                INLET   148
      WRITE(6,4)LFAC,JAXI                                               INLET   149
    4 FORMAT(1X,'LFAC=',I2,',JAXI=',I2)                                 INLET   150
      KMAXM1=KMAX-1                                                     INLET   151
C     IF JAXI =1 FLOW IS AXISYMM  IF JAXI=0 PLANE FLOW                  INLET   152
      JINPL=34                                                          INLET   153
      RINF=1.0                                                          INLET   154
      PINF=1./GAMMA                                                     INLET   155
      QINF=FSMACH                                                       INLET   156
      HTINF=GAMMA/GAM1+PINF/RINF+QINF**2*0.5                            INLET   157
      INIT = 1                                                          BC        8
      J1 = JTAIL1                                                       BC        9
      J2 = JTAIL2                                                       BC       10
      J3=JINPL                                                          INLET   158
      J1P = J1 + 1                                                      BC       11
      J2M = J2 -1                                                       BC       12
      J1M = J1 -1                                                       BC       13
      J2P = J2 +1                                                       BC       14
      K = 1                                                             BC       15
      DO 90 J=J1,J2                                                     BC       16
      DETAS(J1) = ETT(J,K)                                              BC       17
      DETAS1(J1)=ETT(J,KMAX)                                            INLET   159
   90 CONTINUE                                                          BC       18
C     FOSO =0  FOR FIRST ORDER AND =1  FOR SECOND ORDER ACCURACY        BC       19
C       IN THE EVALUATION OF DPDETA                                     BC       20
      FOSO = 0                                                          BC       21
C                                                                       BC       22
    9 NN = NN +1                                                        BC       23
C   BODY INFLATED OVER 150 ITERATIONS                                   INLET   160
      T = ( NN -1 )/36                                                  BC       24
      IF( T .GT. 1 ) T = 1                                              BC       25
      SCAL = 1.0  -15 *T * 6 *T*T) *T**3                                BC       26
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      IF( IREGO .GT. 0) SCAL=1                                          BC       37
      SCAL1=SCAL                                                        INLET    161
   60 C                                                                 INLET    162
      C  NCRIT IS NTIME WHEN SHOCK IS AT LIP IN SUBCRIT OUTFLOW         INLET    163
      NCRIT=2500                                                        INLET    164
      C                                                                 INLET    165
      NNE=1                                                             INLET    166
   65 IF(NN .LT. NNE)GO TO 60                                           INLET    167
      T=(NN-NNE)/40                                                     INLET    168
      IF(T .GT. 1 )T=1                                                  INLET    169
      SCAL=(10 -15 *T+6 *T*T)*T**3)                                     INLET    170
      IF( IREGO .GT. 0)SCAL=1                                           INLET    171
   70 C                                                                 BC       28
      C  OBTAIN U AND V ON BODY VIA TANGENCY AND EXTRAPOLATION OF UCAP  BC       29
      C     THIS SECTION FOR COWL WALLS                                 INLET    172
      DO 52 J=J1, J2                                                    BC       31
      UEXT = 2 *( XI(I,J,2) *(XY(I,J,2,1)*Q(I,J,2,2)/Q(I,J,2,1) - XY(I,J,2,2)*
   75 1  Q(I,J,2,3)/Q(I,J,2,1)) -( XI(I,J,3) * XY(I,J,3,1)*Q(I,J,3,2)/Q(I,J,3,1)
      2  - XY(I,J,3,2) *Q(I,J,3,3)/Q(I,J,3,1))                          BC       34
      IF( INVIS .GT. 0) UEXT = 0                                        BC       35
      U1 = ( XY(I,J,1,4)*(UEXT - XI(I,J,1)) + XY(I,J,1,2)*(ETT(I,J,1)/P(I,J,1)      BC       36
      V1 = ( - XY(I,J,1,3)*( UEXT - XI(I,J,1)) -XY(I,J,1,1)*(ETT(I,J,1)/P(I,J,1))  BC       37
   80 U1 = ( 1  - SCAL)*Q(I,J,1,2)/Q(I,J,1,1)) + SCAL*U1                BC       38
      V1 = ( 1  - SCAL)*Q(I,J,1,3)/Q(I,J,1,1)) + SCAL*V1                BC       39
      C     Q2 AND Q3 NOW SATISFY TANGENCY    INDEPENDTLY OF WHETHER    BC       40
      C                  DENSITY IS LAGGED                              BC       41
      Q(I,J,1,2) = U1*Q(I,J,1,1)                                        BC       42
   85 Q(I,J,1,3) = V1*Q(I,J,1,1)                                        BC       43
   52 CONTINUE                                                          BC       44
   60 CONTINUE                                                          INLET    173
      K=1                                                               INLET    174
      SCAL=SCAL1                                                        INLET    175
   90 IF(NN .GE. NNE)GO TO 61                                           INLET    176
      DO 62 I=1,4                                                       INLET    177
      DO 67 J=J1, J2                                                    INLET    178
      Q(I,K,J)=Q(I,K+1,J)*P(I,K+1)/P(I,K)                               INLET    179
   67 CONTINUE                                                          INLET    180
   95 62 CONTINUE                                                       INLET    181
      61 CONTINUE                                                       INLET    182
      C                                                                 INLET    183
      C     THIS SECTION FOR BODY + RAMP WALLS                          INLET    184
      K=KMAX                                                            INLET    185
  100 KMM=KM-1                                                          INLET    186
      DO 53 J=J1, J3                                                    INLET    187
      UEXT=2 *(XI(I,J,KM1)*XY(I,J,KM,1)*Q(I,J,KM,2)/Q(I,J,KM,1)+XY(I,J,KM,2)*
     *Q(I,J,KM,3)/Q(I,J,KM,1))-(XI(I,J,KMM1)*XY(I,J,KMM,1)*Q(I,J,KMM,2)/Q(I,J,KMM,1))  INLET    189
     **XY(I,J,KMM,2)*Q(I,J,KMM,3)/Q(I,J,KMM,1))                         INLET    190
  105 IF(INVIS .GT. 0)UEXT=0.0                                          INLET    191
      U2=(XY(I,J,K,4)*(UEXT-XI(I,J,K1))+XY(I,J,K,2)*(ETT(I,J,K1)/P(I,J,K1)      INLET    192
      V2=(-XY(I,J,K,3)*(UEXT-XI(I,J,K1))+XY(I,J,K,1)*(ETT(I,J,K1)/P(I,J,K1))    INLET    193
      U2=(1 -SCAL)*Q(I,J,K,2)/Q(I,J,K,1))+SCAL*U2                       INLET    194
      V2=(1 -SCAL)*Q(I,J,K,3)/Q(I,J,K,1))+SCAL*V2                       INLET    195
  110 C     Q2 AND Q3 NOW SATISFY TANGENCY    INDEPENDTLY OF WHETHER    INLET    196
      C                 DENSITY IS LAGGED                               INLET    197
      Q(I,K,2)=U2*Q(I,K,1)                                              INLET    198
      Q(I,K,3)=V2*Q(I,K,1)                                              INLET    199
   53 CONTINUE                                                          INLET    200
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                 55  CONTINUE                                                    INLET  201
                C                                                               BC     45
                C                                                               BC     46
                      IF(LFAC.NE.1)GO TO 1                                      INLET  202
                      GO TO 2                                                   INLET  203
                   1 CONTINUE                                                   INLET  204
                C     SUPERCRITICAL OUTFLOW B.C.                                INLET  205
                C     VARIABLES EXTRAPOLATED                                    INLET  206
                      DO 999 K=1,KMAX                                           INLET  207
                      J=1                                                       INLET  208
                      Q(J,K,1)=Q(J+1,K,1)*P(J+1,K)/P(J,K)                       INLET  209
                      Q(J,K,2)=Q(J+1,K,2)*P(J+1,K)/P(J,K)                       INLET  210
                      Q(J,K,3)=Q(J+1,K,3)*P(J+1,K)/P(J,K)                       INLET  211
                      Q(J,1,3)=0                                                INLET  212
                      Q(J,KMAX,3)=0                                             INLET  213
                      Q(J,K,4)=Q(J+1,K,4)*P(J+1,K)/P(J,K)                       INLET  214
                 999 CONTINUE                                                   INLET  215
                      GO TO 63                                                  INLET  216
                   2 CONTINUE                                                   INLET  217
                C     OUTFLOW BOUNDARY                                          INLET  218
                C     IF LFAC=1, OUTFLOW IS SUBSONIC OTHERWISE SUPERSONIC       INLET  219
                C  TEST IF UPSTREAM OR DOWNSTREAM IS REFLECTED                  BC     47
                C     SUBCRITICAL OUTFLOW B.C.                                  INLET  220
                      DO 11 K=1,KMAX                                            INLET  221
                      PPB(1,K)=6.4                                              INLET  222
                      UD(2,K)=Q(2,K,2)/Q(2,K,1)                                 INLET  223
                      VD(1,K)=0                                                 INLET  224
                      UD(1,K)=UD(2,K)                                           INLET  225
                      DEN(2,K)=Q(2,K,1)*P(2,K)                                  INLET  226
                      DEN(1,K)=DEN(2,K)                                         INLET  227
                   11 CONTINUE                                                  INLET  228
                C     SETS WALL PRESSURE                                        INLET  229
                      PPB(1,1)=                    PPB(1,2)                     INLET  230
                      PPB(1,KMAX)=                         PPB(1,KM)           INLET  231
                C     NOW CALCULATES ENERGY                                     INLET  232
                      DO 17 K=1,KMAX                                            INLET  233
                      RAP1=DEN(1,K)*0.5*(UD(1,K)**2)                            INLET  234
                      EN(1,K)=RAP1+(1./4.)*PPB(1,K)                             INLET  235
                   17 CONTINUE                                                  INLET  236
                C     CALCULATES FLUX VARIABLES, FORMS Q-HAT                    INLET  237
                      DO 19 K=1,KMAX                                            INLET  238
                      SOS=SQRT(ABS(1.4*PPB(1,K)/DEN(1,K)))                      INLET  239
                      Q(1,K,1)=DEN(1,K)/P(1,K)                                  INLET  240
                      Q(1,K,2)=(DEN(1,K)*UD(1,K))/P(1,K)                        INLET  241
                      Q(1,K,3)=(DEN(1,K)*VD(1,K))/P(1,K)                        INLET  242
                      Q(1,K,4)=EN(1,K)/P(1,K)                                   INLET  243
                      IF(UD(1,K).LT.SOS)GO TO 209                               INLET  244
                      Q(1,K,1)=Q(2,K,1)*P(2,K)/P(1,K)                           INLET  245
                      Q(1,K,2)=Q(2,K,2)*P(2,K)/P(1,K)                           INLET  246
                      Q(1,K,3)=Q(2,K,3)*P(2,K)/P(1,K)                           INLET  247
                  209 CONTINUE                                                  INLET  248
                   19 CONTINUE                                                  INLET  249
                   63 CONTINUE                                                  INLET  250
                      KDUP=1                                                    INLET  251
                      J=2                                                       INLET  252
                   77 FLR=0                                                     INLET  253
                      DO 76 K=1,KMAXM1                                          INLET  254
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```
                PA1=Q(J,K,2)*P(J,K)+Q(J,K+1,2)*P(J,K+1)                          INLET    255
                PA2=Y(J,K+1)-Y(J,K)                                              INLET    256
                FLR=FLR+PA1*PA2* 5                                               INLET    257
175           76 CONTINUE                                                        INLET    258
                FLR=-FLR* 5/RINF/QINF                                            INLET    259
                WRITE(6,137)FLR,NN,J                                             INLET    260
              137 FORMAT(1X,*MDOT=*,E12.5,*TIME STEP=*,I5,*JINDEX=*,I5)          INLET    261
                KDUP=KDUP+1                                                      INLET    262
180             J=J-5                                                            INLET    263
                IF(KDUP.LE.4)GO TO 77                                            INLET    264
C     END OF SHB METHOD                                                          INLET    265
                J = JMAX                                                         BC        55
                DO 20 K=1,KMAX                                                   BC        56
185             DO 21 N=1,4                                                      BC        57
              21 Q(J,K,N) = Q(J-1,K,N)*P(J-1,K)/P(J,K)                           BC        58
              20 CONTINUE                                                        BC        59
              29 CONTINUE                                                        BC        60
C                                                                                BC        61
190           C  SATISFY MOMENTUM RELATION FOR NORMAL PRESSURE DERIVATION        BC        62
              C             THIS SECTION FOR COWL WALLS                        INLET    266
                K = 1                                                            BC        63
                IF(NN.LE.NNE)GO TO 73                                            INLET    267
                DO 30 J=J1,J2                                                    BC        64
195             RHO = Q(J,K,1)*P(J,K)                                            BC        65
                UU = ( XY(J,K,1)*Q(J,K,2) + XY(J,K,2)*Q(J,K,3))/Q(J,K,1)         BC        66
               1 + XIT(J,K)                                                      BC        67
                UXI =  5*( Q(J+1,K,2)/Q(J+1,K,1) - Q(J-1,K,2)/Q(J-1,K,1))        BC        68
                VXI =  5*( Q(J+1,K,3)/Q(J+1,K,1) - Q(J-1,K,3)/Q(J-1,K,1))        BC        69
200             FF = RHO*UU*( XY(J,K,3)*UXI+XY(J,K,4)*VXI) -RHO*(ETT(J,K) -      BC        70
               1   DETAS(J))/DT                                                  BC        71
              C****AXISYMMETRIC OPTION                                           INLET    268
                AX1=(Q(J,K,2)/Q(J,K,1))*XY(J,K,3)                                INLET    269
                AX2=(Q(J,K,3)/Q(J,K,1))*XY(J,K,4)                                INLET    270
205             AX3=AX1+AX2                                                      INLET    271
                AX4=RHO*(Q(J,K,3)/Q(J,K,1))/Y(J,K)                               INLET    272
                FF=FF+AX3+AX4+JAX1                                               INLET    273
                DETAS(J) = ETT(J,K)                                              BC        72
                C1 = XY(J,K,3)*XY(J,K,1) + XY(J,K,2)*XY(J,K,4)                   BC        73
210             C2 = XY(J,K,3)**2 + XY(J,K,4)**2                                 BC        74
                P2 = GAMI*( Q(J,2,4) - 5*(Q(J,2,2)**2+Q(J,2,3)**2) /Q(J,2,1) )   BC        75
                P3 = GAMI*( Q(J,3,4) - 5*(Q(J,3,2)**2+Q(J,3,3)**2) /Q(J,3,1) )   BC        76
                F(J) = -FF+C2*(-(1 +FOSO)*P2*P(J,K+1)+ 5*FOSO*P3*P(J,K+2))       BC        77
                A(J) = - 5*C1                                                    BC        78
215             C(J) =  5*C1                                                     BC        79
                B(J) = -(1 + 5*FOSO)*C2                                          BC        80
              30 CONTINUE                                                        BC        81
                JJ = J1-1                                                        BC        82
                PBC = GAMI*( Q(JJ,K,4) - 5*( Q(JJ,K,2)**2 +Q(JJ,K,3)**2)/Q(JJ,K,1) BC       83
220            1  )                                                              BC        84
                F(J1) = F(J1) - A(J1)*PBC*P(JJ,K)                                BC        85
                JJ = J2+1                                                        BC        86
                PBC = GAMI*( Q(JJ,K,4) - 5*( Q(JJ,K,2)**2 +Q(JJ,K,3)**2)/Q(JJ,K,1) BC       87
               1  )                                                              BC        88
225             F(J2) = F(J2) - C(J2)*PBC*P(JJ,K)                                BC        89
                CALL TRIB(A,B,C,Z,F,J1,J2)                                       BC        90
                DO 31 J=J1,J2                                                    BC        91
                F1=F(J1)/P(J,1)                                                  INLET    274
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                BETA=0                                                          INLET   275
230             NTSG=300                                                        INLET   276
                IF(NTIME GE NTSG)GO TO 161                                      INLET   277
                IF(J LT 10)BETA= 1                                              INLET   278
              161 CONTINUE                                                      INLET   279
                IF(ILFAC NE 1)GO TO 33                                          INLET   280
235             IF(NTIME LT NCRIT)GO TO 33                                      INLET   281
            C     CHANGE THIS CARD FOR EACH NEW GEOMETRY                        INLET   282
                IF(J GE 30 AND J LE 38)BETA= 1                                  INLET   283
               33 CONTINUE                                                      INLET   284
                IF(J GE J1+1 AND J LE J2-1)                                     INLET   285
240            *F1=(1 1 -2 *BETA)*F(J1=BETA*(F(J-1)=F(J=1111/P(J,K)            INLET   286
            C RESCALE Q2 AND Q3 TO NEW DENSITY SUCH THAT WHEN REFORMING PRESSURE BC      93
            C      FROM Q1 TO Q4, THE NORMAL DERIVATIVE OF PRESSURE IS SATIFIED  BC      94
                RHO = Q(J,K,1)                                                  BC      95
                Q(J,K,1) = Q(J,2,1)*P(J,2)/P(J,1)                               BC      96
245             Q(J,K,2) = Q(J,K,2)*Q(J,K,1)/RHO                                BC      97
                Q(J,K,3) = Q(J,K,3)*Q(J,K,1)/RHO                                BC      98
                Q(J,K,4)=F1/GAM1=0 5*(Q(J,K,2)**2+Q(J,K,3)**2)/Q(J,K,1)         INLET   287
               31 CONTINUE                                                      BC     100
               73 CONTINUE                                                      INLET   289
250         C                                                                   BC     101
             65   CONTINUE                                                      INLET   289
            C              THIS SECTION FOR BODY + RAMP WALLS                   INLET   290
                K=KMAX                                                          INLET   291
                DO 40 J=J1,J3                                                   INLET   292
255             RHO=Q(J,K,1)*P(J,K)                                             INLET   293
                UU=(XY(J,K,1)*Q(J,K,2)+XY(J,K,2)*Q(J,K,3))/Q(J,K,1)+XIT(J,K)    INLET   294
                UX1=0 5*(Q(J+1,K,2)/Q(J+1,K,1)-Q(J-1,K,2)/Q(J-1,K,1))           INLET   295
                VX1=0 5*(Q(J+1,K,3)/Q(J+1,K,1)-Q(J-1,K,3)/Q(J-1,K,1))           INLET   296
                IF(J NE J3)GO TO 45                                             INLET   297
260             UX1=0 5*(3 *Q(J,K,2)/Q(J,K,1)-4 *Q(J-1,K,2)/Q(J-1,K,1)+Q(J-2,K,2)/ INLET 298
               *Q(J-2,K,1))                                                     INLET   299
                VX1=0 5*(3 *Q(J,K,3)/Q(J,K,1)-4 *Q(J-1,K,3)/Q(J-1,K,1)+Q(J-2,K,3)/ INLET 300
               *Q(J-2,K,1))                                                     INLET   301
              45   CONTINUE                                                     INLET   302
265             FF=RHO*(UU*(XY(J,K,3)*UX1-XY(J,K,4)*VX1)-RHO*(ETT(J,K)-DETAS1(J)) INLET 303
               */DT                                                             INLET   304
            C****AXISYMMETRIC OPTION                                            INLET   305
                AX1=(Q(J,K,2)/Q(J,K,1))*XY(J,K,3)                               INLET   306
                AX2=(Q(J,K,3)/Q(J,K,1))*XY(J,K,4)                               INLET   307
270             AX3=AX1+AX2                                                     INLET   308
                AX4=RHO*(Q(J,K,3)/Q(J,K,1))/Y(J,K)                              INLE    309
                FF=FF-AX3+AX4*JAX1                                              INLET   310
                DETAS1(J)=ETT(J,K)                                              INLET   311
                C1=XY(J,K,3)*XY(J,K,1)+XY(J,K,2)*XY(J,K,4)                      INLET   312
275             C2=XY(J,K,3)**2+XY(J,K,4)**2                                    INLET   313
                P2=GAM1*(Q(J,KM,4)-0 5*(Q(J,KM,2)**2+Q(J,KM,3)**2)/Q(J,KM,1))   INLET   314
                P3=GAM1*(Q(J,KMM,4)-0 5*(Q(J,KMM,2)**2+Q(J,KMM,3)**2)/Q(J,KMM,1)) INLET 315
                F(J1)=-FF+C2*(1-(1 +FOSO1)*P2+P(J,KM1)+0 5*FOSO*P3*P(J,KMM1))   INLET   316
                A(J1)=- 5*C1                                                    INLET   317
280             B(J1)=(1 +0 5*FOSO1)*C2                                         INLET   318
                C(J1)=0 5*C1                                                    INLET   319
              40   CONTINUE                                                     INLET   320
                JJ=J1-1                                                         INLET   321
                PBC=GAM1*(Q(JJ,K,4)-0 5*(Q(JJ,K,2)**2+Q(JJ,K,3)**2)/Q(JJ,K,1))  INLET   322
285             F(J1)=F(J1)-A(J1)*PBC*P(JJ,K)                                   INLET   323
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                JJ=J3+1                                                          INLET    324
                PBC=GAMI*(Q(JJ,K,4)-0.5*(Q(JJ,K,2)**2+Q(JJ,K,3)**2)/Q(JJ,K,1))   INLET    325
                F(J3)=F(J3)-C(J3)*PBC*P(JJ,K)                                    INLET    326
                CALL TRIBIA(B,C,Z,F,J1,J3)                                       INLET    327
290             DO 41 J=J1,J3                                                    INLET    328
                F1  =F(J)/P(J,KMAX)                                              INLET    329
                BETA=0                                                           INLET    330
                IF(INTIME.GE.NTSG)GO TO 162                                      INLET    331
                IF(J.LT.10)BETA=.1                                               INLET    332
295           162 CONTINUE                                                       INLET    333
                IF(J .GE. J1+1 .AND. J .LE. J3-1)                                INLET    334
               *F1=((1.-2.*BETA)*F(J)+BETA*(F(J-1)+F(J+1)))/P(J,KMAX)            INLET    335
              C RESCALE G2 AND G3 TO NEW DENSITY SUCH THAT WHEN REFORMING PRESSURE INLET    336
              C     FROM Q1 TO Q4 THE NORMAL DERIVATIVE OF PRESSURE IS SATISFIED   INLET    337
300             RHO=Q(J,K,1)                                                     INLET    338
                Q(J,K,1)=Q(J,KM,1)*P(J,KM1)/P(J,KMAX)                            INLET    339
                Q(J,K,2)=Q(J,K,2)*Q(J,K,1)/RHO                                   INLET    340
                Q(J,K,3)=Q(J,K,3)*Q(J,K,1)/RHO                                   INLET    341
                Q(J,K,4)=F1/GAMI+.5*(Q(J,K,2)**2+Q(J,K,3)**2)/Q(J,K,1)           INLET    342
305          41 CONTINUE                                                         INLET    343
                RETURN                                                           BC       117
                END                                                              BC       118
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      SUBROUTINE RHS                                                    RHS     2
      COMMON/BASE/NM4X,JMAX,KMAX,JM,KM,DT,FSMACH,EPS,GAMMA,GAMI,SMU,HO, BASE    2
     1  FV(4),FD(4),HE,PI,Z(80),NP,METH,ALPHA,INVIS,IPLOT,RESID         BASE    3
     2, CNBR,IREGO,ISTORE,NF,NB,JTAIL1,JTAIL2,IOSCIL,XOSCIL,IUPWND      BASE    4
     3  , LAMIN,SMUIM,VARA,VARB,VARC                                    BASE    5
      COMMON/VARS/ Q(78,36,4),XY(78,36,4),P(78,36)                      VARS    2
      COMMON/LARGE/X(78,36),Y(78,36),S(78,36,4),XIT(78,36),ETT(78,36)   VARS    3
      LEVEL 2,X,Y,S,XIT,ETT                                             VARS    4
      COMMON/BTRID/ A(80,4,4),B(80,4,4),C(80,4,4),D(80,4,4),DU(80,4,4), RHS     5
     1   F(80,4)                                                        RHS     6
      COMMON/UPWND/ EB(80),EF(80)                                       RHS     7
      COMMON/AVERM/ SS(80),SXP(80),SYP(80),SXN(80),SYN(80),SF(80)       RHS     8
      DIMENSION VP(80,4),VN(80,4),G(80,4)                               RHS     9
      COMMON/AXI/JAXI                                                   'NLET   344
      COMMON/AXISYM/FAXI(4)                                             INLET   345
      COMMON/SYM/HAXI(80,50)                                            INLET   346
      LEVEL 2,HAXI                                                      INLET   347
C                                                                       RHS     10
C                                                                       RHS     11
C****THIS SUBROUTE CALCULATES THE RHS OF THE  FINITE DIFF  EQN IN DELTA INLET   348
C     FORM ALGORITHM                                                    INLET   349
C     FOR 2ND ORDER IN TIME SET RO=-0.5*DT                              INLET   350
C     FOR FIRST ORDER IN TIME SET RO=-DT                                INLET   351
C       CENTRAL DIFFERENCING USED IN ETA DIRECTION                      RHS     12
      DO 29 J=2,JM                                                      RHS     13
      DO 20 K=1,KMAX                                                    RHS     14
      R1 = XY(J,K,3)                                                    RHS     15
      R2 = XY(J,K,4)                                                    RHS     16
      R4 = ETT(J,K)                                                     RHS     17
      CALL FLUXVE(J,K,R1,R2,0.,R4)                                      RHS     18
      DO 22 N=1,4                                                       RHS     19
   22 F(K,N) = FV(N)                                                    RHS     20
   20 CONTINUE                                                          RHS     21
      RO = -.5*DT                                                       RHS     22
      CALL DIFFERIF,FV,FD,RO,2,KM)                                      RHS     23
      DO 24 N=1,4                                                       RHS     24
      DO 24 K=2,KM                                                      RHS     25
   24 S(J,K,N) = F(K,N)                                                 RHS     26
   29 CONTINUE                                                          RHS     27
C                                                                       RHS     28
      IF( INVIS.GT.0) CALL VISRHS                                       RHS     29
C                                                                       RHS     30
C       CENTRAL/UPWIND DIFFERENCING USED IN XI                          RHS     31
C     COMPUTE FLUX VECTORS AND UPWIND SWITCHING PARAMETERS              RHS     32
      DO 19 K=2,KM                                                      RHS     33
      DO 10 J=1,JMAX                                                    RHS     34
      R1 = XY(J,K,1)                                                    RHS     35
      R2 = XY(J,K,2)                                                    RHS     36
      R3 = XIT(J,K)                                                     RHS     37
      CALL FLUXVE(J,K,R1,R2,R3,0.)                                      RHS     38
      IF( IUPWND.GT.0) GO TO 49                                         RHS     39
      RINV = 1./Q(J,K,1)                                                RHS     40
      U = XIT(J,K) + RINV*( XY(J,K,1)*Q(J,K,2)+ XY(J,K,2)*Q(J,K,3))     RHS     41
      PP= GAMI*( Q(J,K,4) - .5*(Q(J,K,2)**2+Q(J,K,3)**2)*RINV)          RHS     42
      CC = SQRT( GAMMA*PP*( XY(J,K,1)**2+XY(J,K,2)**2)*RINV)            RHS     43
      UMC = U - CC                                                      RHS     44
      UPC = U + CC                                                      RHS     45
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                EB(J) = .5 - SIGN(.5,UMC)                                          RHS        46
                EF(J) = .5 - SIGN(.5,UPC)                                          RHS        47
60            49 CONTINUE                                                          RHS        48
                DO 12 N=1,4                                                        RHS        49
                HAXI(J,N)=FAXI(N)                                                  INLET     352
             12 F(J,N) = FV(N)                                                     RHS        50
             10 CONTINUE                                                           RHS        51
65         C    ADJUST SHOCK POINT OPERATOR                                       RHS        52
                IF( IUPWND.LE.0) CALL SHCKOP(2,JM)                                 RHS        53
                RO = -.5*DT                                                        RHS        54
                DO 18 N=1,4                                                        RHS        55
                DO 18 J=2,JM                                                       RHS        56
70              G(J,N) = RO*( (1.-EB(J))*EF(J-1))*F(J,N) + ( EB(J-1) + EB(J) -     RHS        57
               1  EF(J-1) -EF(J))*F(J,N) -(1.-EB(J-1))*EF(J))*F(J-1,N))           RHS        58
             18 CONTINUE                                                           RHS        59
                DO 17 N=1,4                                                        RHS        60
                DO 17 J=2,JM                                                       RHS        61
75           17 F(J,N) = G(J,N) + .5*( EB(J-1)*S(J-1,K,N)*(2.-EB(J)-EF(J)))*S(J,K,N)RHS        62
               1   - EF(J-1)*S(J-1,K,N))                                           RHS        63
                DO 14 N=1,4                                                        RHS        64
                DO 14 J=2,JM                                                       RHS        65
             14 S(J,K,N) = F(J,N)                                                  RHS        66
80         C****AXISYMMETRIC OPTION                                                INLET     353
                DO 8 N=1,4                                                         INLET     354
                DO 8 J=2,JM                                                        INLET     355
                S(J,K,N)=S(J,K,N)+HAXI(J,N)*JAXI*RO                                INLET     356
              8 CONTINUE                                                           INLET     357
85           19 CONTINUE                                                           RHS        67
                GO TO 9                                                            RHS        68
           C                                                                       RHS        69
           C                                                                       RHS        70
             9 CONTINUE                                                            RHS        71
90              RETURN                                                             RHS        72
                END                                                                RHS        73
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      SUBROUTINE FLUXVE(J,K,  R1,R2,R3,R4)                                  FLUXVE     2
      COMMON/AXISYM/FAXI(4)                                                 INLET    358
      COMMON/ZAMPA/NTSG                                                     INLET    359
      COMMON/BIR/NCRIT                                                      INLET    360
      COMMON/ZAM/NTIME                                                      INLET    361
      COMMON/BASE/NMAX,JMAX,KMAX,JM,KM,DT,FSMACH,EPS,GAMMA,GAMI,SMU,HD,     BASE       2
     1  FV(4),FD(4),RE,PI,Z(80),NP,METH,ALPHA,INVIS,IPLOT,RESID              BASE       3
     2, CNBR,IREGO,ISTORE,NF,NB,JTAIL1,JTAIL2,IOSCIL,XOSCIL,IUPWND          BASE       4
     3 , LAMIN,SMUIM,VARA,VARB,VARC                                         BASE       5
      COMMON/VARS/ Q(78,36,4),XY(78,36,4),P(78,36)                          VARS       2
      COMMON/LARGE/X(78,36),Y(78,36),S(78,36,4),XIT(78,36),ETT(78,36)       VARS       3
      LEVEL 2,X,Y,S,XIT,ETT                                                 VARS       4
      RR = 1 /Q(J,K,1)                                                      FLUXVE     5
      U = Q(J,K,2)*RR                                                       FLUXVE     6
      V = Q(J,K,3)*RR                                                       FLUXVE     7
      RO = R3 + R4                                                          FLUXVE     8
      QS = RO +R1*U + R2*V                                                  FLUXVE     9
C****THIS SUBROUTINE COMPUTES THE VECTOR OF UNKNOWNS IN THE TRANSFORMED     INLET    362
C ...  SMOOTHING OF THE PRESSURE FIELD                                      INLET    363
      BETA=0 0                                                              INLET    364
      PPJP1=0 0                                                             INLET    365
      PPJM1=0 0                                                             INLET    366
      PINF=1 0/GAMMA                                                        INLET    367
      RINF=1 0                                                              INLET    368
      QINF=FSMACH                                                           INLET    369
      HTINF=GAMMA/GAMI*PINF/RINF*QINF**2*0 5                                INLET    370
      BETA1=0 0                                                             INLET    371
      IF(K  EQ  1  OR  K  EQ  KMAX)GO TO 5                                  INLET    372
      IF(J  EQ  1  OR  J  EQ  JMAX)GO TO 5                                  INLET    373
      BETA=0                                                                INLET    374
      IF(NTIME LT NCRIT)GO TO 20                                            INLET    375
C   CHANGE THIS CARD FOR EACH NEW GEOMETRY                                  INLET    376
      IF(K GT 4)GO TO 20                                                    INLET    377
      IF(J GE 30 AND J LE 38)BETA= 1                                        INLET    378
      BETA1=BETA                                                            INLET    379
   20 CONTINUE                                                              INLET    380
      KMAXM6=KMAX-6                                                         INLET    381
      JMAXM6=JMAX-6                                                         INLET    382
      IF(K GE KMAXM6 AND J GE JMAXM6)BETA= 1                                INLET    383
C    SUBCRITICAL CASE                                                       INLET    384
      IF(NTIME GE NTSG)GO TO 31                                             INLET    385
      IF(J LT 10)BETA= 1                                                    INLET    386
      BETA1=BETA                                                            INLET    387
   31 CONTINUE                                                              INLET    388
      RRP=1 /Q(J+1,K,1)                                                     INLET    389
      RRM=1 /Q(J-1,K,1)                                                     INLET    390
      UP=Q(J+1,K,2)*RRP                                                     INLET    391
      VP=Q(J+1,K,3)*RRP                                                     INLET    392
      UM=Q(J-1,K,2)*RRM                                                     INLET    393
      VM=Q(J-1,K,3)*RRM                                                     INLET    394
      PPJP1=GAMI*(Q(J+1,K,4)*P(J+1,K)-0 5*Q(J+1,K,1)*P(J+1,K)*(UP*UP+VP     INLET    395
     **VP))                                                                 INLET    396
      PPJM1=GAMI*(Q(J-1,K,4)*P(J-1,K)-0 5*Q(J-1,K,1)*P(J-1,K)*(UM*UM+VM     INLET    397
     **VM))                                                                 INLET    398
    5 PPJ=GAMI*(Q(J,K,4)*P(J,K)-0 5*Q(J,K,1)*P(J,K)*(U*U+V*V))              INLET    399
      PP=((1 -2 *BETA)*PPJ+BETA*(PPJP1+PPJM1))/P(J,K)                       INLET    400
C****AXISYMETRUC OPTION                                                     INLET    401
```

```
      C     CONSTRUCT THE H-VECTOR                                          INLET  402
            FAX(1)=Q(J,K,1)*V/P(J,K)                                        INLET  403
60          FAX(2)=Q(J,K,1)*V*U/P(J,K)                                      INLET  404
            FAX(3)=FAX(1)*V                                                 INLET  405
            FAX(4)=((Q(J,K,4)/P(J,K))+PP)*V                                 INLET  406
            DO 46 N=1,4                                                     INLET  407
            FAX(N)=FAX(N)/(Y(J,K)*P(J,K))                                   INLET  408
65        46 CONTINUE                                                       INLET  409
            Q(J,K,4)=PP/GAMI+0.5*(Q(J,K,2)**2+Q(J,K,3)**2)/Q(J,K,1)         INLET  410
            Q(J,K,1)=(Q(J,K,4)+PP)/HTINF*BETA)*Q(J,K,1)*(1.-BETA))          INLET  411
            FV(1)= Q(J,K,1)*QS                                              FLUXVE  11
            FV(2)= Q(J,K,2)*QS + R1*PP                                      FLUXVE  12
70          FV(3)= Q(J,K,3)*QS + R2*PP                                      FLUXVE  13
            FV(4) = QS*( Q(J,K,4) + PP) - PP*R0                             FLUXVE  14
            RETURN                                                          FLUXVE  15
            END                                                             FLUXVE  16
```

```
      SUBROUTINE DIFFER(F,FV,FD,RO,I1,I2)                                DIFFER      2
      DIMENSION F(80,4),FV(4),FD(4)                                      DIFFER      3
C****THIS SUBROUTINE TIME-DIFFERENCES  IF RO=-0 SOT SECOND ORDER          INLET     412
C     IF RO=-DT FIRST ORDER                                              INLET     413
5     DO 12 N=1,4                                                        DIFFER      4
   12 FD(N) = F(I1-1,N)                                                  DIFFER      5
      DO 10 I=I1,I2                                                      DIFFER      6
      IP = I +1                                                          DIFFER      7
      DO 10 N=1,4                                                        DIFFER      8
10    FV(N) = ( F(IP,N) - FD(N))*RO                                      DIFFER      9
      FD(N) = F(I,N)                                                     DIFFER     10
   10 F(I,N) = FV(N)                                                     DIFFER     11
      RETURN                                                             DIFFER     12
      END                                                                DIFFER     13
```

```
SUBROUTINE STEP      76/76   OPT=2 TRACE              FTN 4.6+460      01/09/80  11.58.39      PAGE     1

      1               SUBROUTINE STEP                                                    STEP        2
                      COMMON/BASE/NMAX,JMAX,KMAX,JM,KM,DT,FSMACH,EPS,GAMMA,GAMI,SMU,HO,  BASE        2
                     1  FV(4),FD(4),RE,PI,Z(80),NP,METH,ALPHA,INVIS,IPLOT,RESID         BASE        3
                     2, CNBR,IREGO,ISTORE,NF,NB,JTAIL1,JTAIL2,IOSCIL,XOSCIL,IUPWND      BASE        4
      5              3 , LAMIN,SMUIM,VARA,VARB,VARC                                     BASE        5
                      COMMON/VARS/ Q(78,36,4),XY(78,36,4),P(78,36)                       VARS        2
                      COMMON/LARGE/X(78,36),Y(78,36),S(78,36,4),XIT(78,36),ETT(78,36)    VARS        3
                      LEVEL 2,X,Y,S,XIT,ETT                                              VARS        4
                      COMMON/BTRID/ A(80,4,4),B(80,4,4),C(80,4,4),D(80,4,4),DU(80,4,4),  STEP        5
     10              1   F(80,4)                                                        STEP        6
                      COMMON/AVERM/ SS(80),SXP(80),SYP(80),SXN(80),SYN(80),SF(80)        STEP        7
                      COMMON/UPWND/EB(80),EF(80)                                         STEP        8
                C                                                                        STEP        9
                C****THIS SUBROUTINE CONSTITUTES THE MAIN STEP IN THE  INTEGRATION PROCE INLET     414
     15               CALL BC                                                           STEP       10
                      CALL RHS                                                           STEP       11
                      CALL SMOOTH                                                        STEP       12
                C       COMPUTE L2 RESIDUAL                                              STEP       13
                      KHM = KM/2                                                         STEP       14
     20               RESID = 0                                                         STEP       15
                      DO 15 N=1,4                                                        STEP       16
                      DO 15 K=2,KHM                                                      STEP       17
                      DO 15 J=2,JM                                                       STEP       18
                   15 RESID = RESID + S(J,K,N)**2                                        STEP       19
     25               RESID = RESID/( (JM-1)*(KHM-1))                                   STEP       20
                      RESID = SQRT(RESID)/( DT * .00005)                                 STEP       21
                C                                                                        STEP       22
                C       CENTRAL SCHEME WITH UPWIND                                       STEP       23
                      DO 10 K=2,KM                                                       STEP       24
     30               CALL FILTRX(K,1,JMAX)                                             STEP       25
                C   S   MUST BE ZERO ON B C                                            STEP       26
                      CALL BTRI(2,JM)                                                    STEP       27
                      DO 11 J=2,JM                                                       STEP       28
                      DO 11 N=1,4                                                        STEP       29
     35            11 S(J,K,N) = F(J,N)                                                STEP       30
                   10 CONTINUE                                                           STEP       31
                      DO 20 J=2,JM                                                       STEP       32
                      CALL FILTRY(J,1,KMAX)                                              STEP       33
                      CALL BTRI(2,KM)                                                    STEP       34
     40               DO 21 K=2,KM                                                      STEP       35
                      DO 21 N=1,4                                                        STEP       36
                   21 Q(J,K,N) = F(K,N) - Q(J,K,N)                                       STEP       37
                   20 CONTINUE                                                           STEP       38
                      GO TO 9                                                            STEP       39
     45         C                                                                        STEP       40
                C                                                                        STEP       41
                    9 CONTINUE                                                           STEP       42
                      WRITE(6,101) RESID                                                 INLET      415
                  101 FORMAT(1X,*RESIDUAL**,E12.5)                                       INLET      416
     50               RETURN                                                            STEP       43
                      END                                                                STEP       44
```

```
      SUBROUTINE FILTRX(K,J1,J2)                                        FILTRX     2
      COMMON/BASE/NMAX,JMAX,KMAX,JM,KM,DT,FSMACH,EPS,GAMMA,GAMI,SMU,HO, BASE      2
     1  FV(4),FD(4),RE,PI,Z(80),NP,METH,ALPHA,INVIS,IPLOT,RESID         BASE      3
     2, CNBR,IPEGO,ISTORE,NF,NB,JTAIL1,JTAIL2,IOSCIL,XOSCIL,IUPWND     BASE      4
     3 , LAMIN,SMUIM,VARA,VARB,VARC                                    BASE      5
      COMMON/VARS/ Q(78,36,4),XY(78,36,4),P(78,36)                      VARS      2
      COMMON/LARGE/X(78,36),Y(78,36),S(78,36,4),XIT(78,36),ETT(78,36)   VARS      3
      LEVEL 2,X,Y,S,XIT,ETT                                             VARS      4
      COMMON/ARRAY/ ALPX(80),ALPY(80),BETX(80),BETY(80)                 FILTRX    5
      COMMON/BTRID/ A(80,4,4),B(80,4,4),C(80,4,4),D(80,4,4),DU(80,4,4), FILTRX    6
     1  F(80,4)                                                         FILTRX    7
      COMMON/UPWND/ EB(80),EF(80)                                       FILTRX    8
      DIMENSION E(4,4)                                                  FILTRX    9
C****THIS SUBROUTINE MAKES THE FIRST IMPLICVIT SWEEP IN THE XI-DIR       INLET   417
C      ALSO APPLIES  APPLIES THE PSEUDO-IMPLICUT SMOOTHING IN TH XI-DIR INLET   418
      JA = J1+1                                                         FILTRX    10
      JB = J2 -1                                                        FILTRX    11
      DO 10 J=J1,J2                                                     FILTRX    12
      R1 = XY(J,K,1)*HO                                                 FILTRX    13
      R2 = XY(J,K,2)*HO                                                 FILTRX    14
      CALL AMATRX(E,J,K,R1,R2)                                          FILTRX    15
      IF( IUPWND.GT.0 ) GO TO 49                                        FILTRX    16
C      COMPUTE SWITCHING PARAMETERS FO R UPWIND DIFFERENCING            FILTRX    17
      RINV = 1./Q(J,K,1)                                                FILTRX    18
      U = XIT(J,K) + RINV*( XY(J,K,1)*Q(J,K,2)+ XY(J,K,2)*Q(J,K,3))     FILTRX    19
      PP= GAMI*( Q(J,K,4) - 5*(Q(J,K,2)**2+Q(J,K,3)**2)*RINV)           FILTRX    20
      CC = SQRT( GAMMA*PP*( XY(J,K,1)**2+XY(J,K,2)**2)*RINV)            FILTRX    21
      UMC = U - CC                                                      FILTRX    22
      UPC = U + CC                                                      FILTRX    23
      EB(J) =  5 + SIGN( 5.,UMC)                                        FILTRX    24
      EF(J) =  5 - SIGN( 5.,UPC)                                        FILTRX    25
   49 CONTINUE                                                          FILTRX    26
      DO 11 N=1,4                                                       FILTRX    27
      DO 12 M=1,4                                                       FILTRX    28
   12 D(J,N,M) = E(N,M)                                                 FILTRX    29
   11 D(J,N,N) = D(J,N,N) + HO*XIT(J,K)                                 FILTRX    30
   10 CONTINUE                                                          FILTRX    31
      IF( IUPWND.LE.0) CALL SHOKOP(2,JM)                                FILTRX    32
      DO 20 J=JA,JB                                                     FILTRX    33
      DO 21 N=1,4                                                       FILTRX    34
      DO 22 M=1,4                                                       FILTRX    35
      A(J,N,M) = -(1. +EB(J-1) -EF(J))*D(J-1,N,M)                       FILTRX    36
      B(J,N,M) = ( EB(J-1) + EB(J) - EF(J) -EF(J+1))*D(J,N,M)           FILTRX    37
      C(J,N,M) = (1.  - EB(J) + EF(J+1))*D(J+1,N,M)                     FILTRX    38
   22 CONTINUE                                                          FILTRX    39
      F(J,N) = S(J,K,N)                                                 FILTRX    40
      A(J,N,N) = A(J,N,N) + EB(J-1)* 5                                  FILTRX    41
      B(J,N,N) = B(J,N,N) +1.  -  5*( EB(J) + EF(J))                    FILTRX    42
      C(J,N,N) = C(J,N,N) + EF(J+1)* 5                                  FILTRX    43
      EP=SMUIM/P(J,K)                                                   FILTRX    44
      A(J,N,N) = A(J,N,N) - EP*P(J-1,K)                                 FILTRX    45
      B(J,N,N) = B(J,N,N) +2.*EP                                        FILTRX    46
      C(J,N,N) = C(J,N,N) -EP*P(J+1,K)                                  FILTRX    47
   21 CONTINUE                                                          FILTRX    48
   20 CONTINUE                                                          FILTRX    49
      RETURN                                                            FILTRX    50
      END                                                               FILTRX    51
```

```
      SUBROUTINE FILTRY(J,K1,K2)                                        FILTRY     2
      COMMON/BASE/NMAX,JMAX,KMAX,JM,KM,DT,FSMACH,EPS,GAMMA,GAMI,SMU,HO, BASE       2
     1  FV(4),FD(4),PE,PI,Z(80),NP,METH,ALPHA,INVIS,IPLOT,RESID         BASE       3
     2, CNBR,IREGO,ISTORE,NF,NB,JTAIL1,JTAIL2,IOSCIL,XOSCIL,IUPWND     BASE       4
     3 , LAMIN,SMUIM,VARA,VARB,VARC                                    BASE       5
      COMMON/VARS/ Q(78,36,4),XY(78,36,4),P(78,36)                      VARS       2
      COMMON/LARGE/X(78,36),Y(78,36),S(78,36,4),XIT(78,36),ETT(78,36)   VARS       3
      LEVEL 2,X,Y,S,XIT,ETT                                             VARS       4
      COMMON/ARRAY/ ALPX(80),ALPY(80),BETX(80),BETY(80)                 FILTRY     5
      COMMON/BTRID/ A(80,4,4),B(80,4,4),C(80,4,4),D(80,4,4),DU(80,4,4), FILTRY     6
     1   F(80,4)                                                       FILTRY     7
      DIMENSION E(4,4)                                                  FILTRY     8
      KA = K1 +1                                                        FILTRY     9
C****THIS SUBROUTINE MAKES THE SECOND IMPLICIT SWEEP IN THE ETA-DIR     INLET    419
C     ALSO APPLIES PSEUDO -IMPLICIT SMOOTHING IN THIS DIR.              INLET    420
      KB = K2 -1                                                        FILTRY    10
      DO 10 K=K1,K2                                                     FILTRY    11
      R1 = XY(J,K,3) +HO                                                FILTRY    12
      R2 = XY(J,K,4)+HO                                                 FILTRY    13
      CALL AMATRX(E,J,K,R1,R2)                                          FILTRY    14
      DO 11 N=1,4                                                       FILTRY    15
      DO 12 M=1,4                                                       FILTRY    16
   12 DIK(N,M) = E(N,M)                                                 FILTRY    17
   11 DIK(N,N) = DIK(N,N) + HO*ETT(J,K)                                 FILTRY    18
   10 CONTINUE                                                          FILTRY    19
      DO 20 K=KA,KB                                                     FILTRY    20
      DO 21 N=1,4                                                       FILTRY    21
      DO 22 M=1,4                                                       FILTRY    22
      A(K,N,M) = - DIK-1,N,M)                                           FILTRY    23
      B(K,N,M) = 0                                                      FILTRY    24
   22 C(K,N,M) = DIK+1,N,M)                                             FILTRY    25
      F(K,N) = S(J,K,N)                                                 FILTRY    26
      EP = SMUIM/P(J,K)                                                 FILTRY    27
      A(K,N,N) = A(K,N,N) -EP*P(J,K-1)                                  FILTRY    28
      B(K,N,N) = B(K,N,N) +1. +2 *SMUIM                                 FILTRY    29
      C(K,N,N) = C(K,N,N) -EP*P(J,K+1)                                  FILTRY    30
   21 CONTINUE                                                          FILTRY    31
   20 CONTINUE                                                          FILTRY    32
      IF( INVIS .GT. 0) CALL VISMAT(J)                                  FILTRY    33
      RETURN                                                            FILTRY    34
      END                                                               FILTRY    35
```

```
      SUBROUTINE AMATRX(A,J,K,R1,R2)                                    *MATRX      2
      COMMON/BASE/NMAX,JMAX,KMAX,JM,KM,DT,FSMACH,EPS,GAMMA,GAMI,SMU,M   BASE        2
     1  FV(4),FD(4),RE,PI,Z(80),NP,METH,ALPHA,INVIS,IPLOT,RESID         BASE        3
     2, CNPR,IREGO,ISTORE,NF,NB,JTAIL1,JTAIL2,IOSCIL,XOSCIL,IUPWND     BASE        4
     3 , LAMIN,SMUIM,VARA,VARB,VARC                                    BASE        5
      COMMON/VARS/ Q(78,36,4),XY(78,36,4),P(78,36)                      VARS        2
      COMMON/LARGE/X(78,36),Y(78,36),S(78,36,4),XIT(78,36),ETT(78,36)   VARS        3
      LEVEL 2,X,Y,S,XIT,ETT                                             VARS        4
      DIMENSION A(*),4)                                                 AMATRX      5
C****THIS SUBROUTINE CALCULATES THE JACOBIAN MATRICES USED THE LINEARIZA INLET      42
      GAMI = GAMMA -1                                                   AMATRX      6
      RR = 1  / Q(J,K,1)                                                AMATRX      7
      U = Q(J,K,2)*RR                                                   AMATRX      8
      V = Q(J,K,3)*RR                                                   AMATRX      9
      UT = U*U + V*V                                                    AMATRX     10
      C1 = GAMI *UT* 5                                                  AMATRX     11
      C2 = Q(J,K,4)*RR*GAMMA                                            AMATRX     12
      A(1,1) = 0                                                        AMATRX     13
      A(1,2) = R1                                                       AMATRX     14
      A(1,3) = R2                                                       AMATRX     15
      A(1,4) = 0                                                        AMATRX     16
      A(2,1) = ( -U*U +C1)*R1    -U*V*R2                                AMATRX     17
      A(2,2) = - ( GAMMA -3 )*U*R1 + V *R2                              AMATRX     18
      A(2,3) = - GAMI*V*R1 + U*R2                                       AMATRX     19
      A(2,4) = GAMI*R1                                                  AMATRX     20
      A(3,1) = - U*V*R1 + ( -V*V +C1)*R2                                AMATRX     21
       A(3,2) = V*R1 - GAMI*U*R2                                        AMATRX     22
      A(3,3) = U*R1 +(3 -GAMMA)*V*R2                                    AMATRX     23
      A(3,4) = GAMI*R2                                                  AMATRX     24
      QS = U*R1 + V*R2                                                  AMATRX     25
      A(4,1) = ( - C2 + C1*2 )*QS                                       AMATRX     26
      A(4,2) = ( C2 -C1)*R1 - GAMI*U*QS                                 AMATRX     27
      A(4,3) = ( C2 - C1)*R2 - GAMI*V*QS                                AMATRX     28
      A(4,4) = GAMMA*QS                                                 AMATRX     29
      RETURN                                                            AMATRX     30
      END                                                               AMATRX     31
```

```
SUBROUTINE MAP       76/76   OPT=2 TRACE                FTN 4.6-460       01/09/80  11.58.39       PAGE     1

      1                SUBROUTINE MAP (IM,JM,U)                                                  MAP         2
                       DIMENSION U(78,361), NN(80)                                               MAP         3
                       DATA ISL,IBL/1H/,1H /                                                     MAP         4
                  C****THIS SUBROUTINE MAPS THE QUANTITY U (TRANSFORMATION JACOBIAN) NORMA       INLET     422
      5           C    ON THE MAX AND MIN VALUES                                                INLET     423
                  C     ESTABLISH MAX AND MIN                                                    MAP         5
                        VARMX = 0                                                                 MAP         6
                        VARMN = 1000000.                                                          MAP         7
                        DO 10 J=1,JM                                                              MAP         8
     10                 DO 10 I=1,IM                                                              MAP         9
                        VTEST = ABS(U(I,J))                                                       MAP        10
                        IF(VTEST-VARMX) 12,12,13                                                  MAP        11
                  13    VARMX = VTEST                                                             MAP        12
                     12 IF( VTEST - VARMN)14,10,10                                                MAP        13
     15           14    VARMN = VTEST                                                             MAP        14
                  10    CONTINUE                                                                  MAP        15
                  C                                                                               MAP        16
                        DEL = (VARMX-VARMN)                                                       MAP        17
                        IF(DEL- 0001) 99,11,11                                                    MAP        18
     20           11    DEL =  1001*DEL                                                           MAP        19
                  C                                                                               MAP        20
                        DO 15 JJ=1,JM                                                             MAP        21
                        J = JM+1-JJ                                                               MAP        22
                        DO 16 I=1,IM                                                              MAP        23
     25                 AVAR = ABS(U(I,J))-VARMN                                                  MAP        24
                  16    NN(I) = AVAR/DEL                                                          MAP        25
                        WRITE(6,100) (NN(I),I=1,IM )                                              MAP        26
                  100   FORMAT(1H ,119I1)                                                         MAP        27
                        DO 17 I=1,IM                                                              MAP        28
     30                 NN(I) = IBL                                                               MAP        29
                     17 IF(U(I,J) LT 0 0) NN(I) = ISL                                             MAP        30
                        WRITE(6,101) ( NN(I), I=1,IM )                                            MAP        31
                   101 FORMAT(1H+,119A1)                                                          MAP        32
                  15    CONTINUE                                                                  MAP        33
     35           99    RETURN                                                                    MAP        34
                        END                                                                       MAP        35
```

```
      SUBROUTINE VISRHS                                                 VISRHS     2
      COMMON/BASE/NMAX,JMAX,KMAX,JM,KM,DT,FSMACH,EPS,GAMMA,GAMI,SMU,HD, BASE     2
     1  FV(4),FD(4),RE,PI,Z(80),NP,METH,ALPHA,INVIS,IPLOT,RESID         BASE     3
     2, CNSR,IREGO,ISTORE,NF,NB,JTAIL1,JTAIL2,IOSCIL,XOSCIL,IUPWND      BASE     4
     3 , LAMIN,SMUIM,VARA,VARB,VARC                                     BASE     5
      COMMON/VARS/ Q(78,36,4),XY(78,36,4),P(78,36)                      VARS     2
      COMMON/LARGE/X(78,36),Y(78,36),S(78,36,4),XIT(78,36),ETT(78,36)   VARS     3
      LEVEL 2,X,Y,S,XIT,ETT                                             VARS     4
      COMMON/BTRID/ A(80,4,4),B(80,4,4),C(80,4,4),D(80,4,4),DU(80,4,4), VISRHS   5
     1   F(80,4)                                                        VISRHS     6
      COMMON/ VISC/ U(80),V(80),C1(80),C2(80),C3(80),C4(80),TC(80)      VISRHS     7
      COMMON/MUTUR/ TURMU(78,36),SNOR(80),DELST(80),TMO(80),TMI(80)     VISRHS     8
      COMMON/ KINMU/ FMU(80)                                            VISRHS     9
      DATA FMU /80*1.0/                                                 VISRHS    10
      DATA PR,PRTR,FRT/ 72, 8.1 333333/                                 VISRHS    11
      DATA TURMU/2608*0 /                                               VISRHS    12
C****THIS SUBROUTINE CALCULATES THE VISCOUS TERMS IN THE RHS OF THE FINI INLET   424
C     EQUATION IN DELTA FORM  ALGORITHM                                 INLET    425
      HRE = .5*DT/RE                                                    VISRHS    13
      GPR = GAMMA/PR                                                    VISRHS    14
      IF( LAMIN .GE. 0) CALL MUTUR                                      VISRHS    15
C                                                                       VISRHS    16
      DO 30 J=2,JM                                                      VISRHS    17
      CALL MUKIN(J)                                                     VISRHS    18
C                                                                       VISRHS    19
      DO 31 K=1,KMAX                                                    VISRHS    20
      RR = 1./Q(J,K,1)                                                  VISRHS    21
      EXS = XY(J,K,3)**2                                                VISRHS    22
      EYS = XY(J,K,4)**2                                                VISRHS    23
      EXY = XY(J,K,3)*XY(J,K,4)* .3333333                               VISRHS    24
      TURM = TURMU(J,K)                                                 VISRHS    25
      VNU = FMU(K) + TURM                                               VISRHS    26
      GKAP = FMU(K) + PRTR*TURM                                         VISRHS    27
      U(K) = Q(J,K,2)*RR                                                VISRHS    28
      V(K) = Q(J,K,3)*RR                                                VISRHS    29
      DJAC = HRE/P(J,K)                                                 VISRHS    30
      VNUJAC = VNU*DJAC                                                 VISRHS    31
      C1(K) = VNUJAC*( FRT*EXS + EYS)                                   VISRHS    32
      C2(K) = VNUJAC*EXY                                                VISRHS    33
      C3(K) = VNUJAC*( EXS + FRT*EYS)                                   VISRHS    34
      C4(K) = GPR*DJAC*( EXS + EYS)*GKAP                                VISRHS    35
      TC(K) = Q(J,K,4)*RR - .5*( U(K)**2 + V(K)**2)                     VISRHS    36
   31 CONTINUE                                                          VISRHS    37
C                                                                       VISRHS    38
      K = 1                                                             VISRHS    39
      KP = K +1                                                         VISRHS    40
      S1 = ( C1(KP)+C1(K))*( U(KP) -U(K))                               VISRHS    41
      SS = C2(KP) + C2(K)                                               VISRHS    42
      S2 = SS*( V(KP) - V(K))                                           VISRHS    43
      S3 = SS*( U(KP) - U(K))                                           VISRHS    44
      S4 = ( C3(KP) + C3(K))*( V(KP) - V(K))                            VISRHS    45
      R2 = S1 + S2                                                      VISRHS    46
      R3 = S3 + S4                                                      VISRHS    47
      R4 = ( C4(KP) + C4(K))*( TC(KP) - TC(K)) + .5*( S1*(U(KP)+U(K))   VISRHS    48
     1  + S4*( V(KP)+V(K))) + U(KP)*S2 + V(K)*S3                        VISRHS    49
      DO 32 K=2,KM                                                      VISRHS    50
      KP = K + 1                                                        VISRHS    51
```

```
                S1 = ( C1(KP1)-C1(K))*( U(KP1) -U(K))                                  VISRHS     52
                SS = C2(KP1) + C2(K)                                                   VISRHS     53
60              S2 = SS*( V(KP1) - V(K))                                               VISRHS     54
                S3 = SS*( U(KP1) - U(K))                                               VISRHS     55
                S4 = ( C3(KP1) + C3(K))*( V(KP1) - V(K))                               VISRHS     56
                F2 = S1 + S2                                                           VISRHS     57
                F3 = S3 - S4                                                           VISRHS     58
65              F4 = ( C4(KP1) + C4(K))*( TC(KP1) - TC(K)) + 5*( S1*(U(KP1)+U(K))      VISRHS     59
               1   + S4*( V(KP1)+V(K))) + U(KP1)*S2 + V(K)*S3                          VISRHS     60
                F(K,1) = 0                                                             VISRHS     61
                F(K,2) = F2 - R2                                                       VISRHS     62
                F(K,3) = F3 - R3                                                       VISRHS     63
70              F(K,4) = F4 - R4                                                       VISRHS     64
                R2 = F2                                                                VISRHS     65
                R3 = F3                                                                VISRHS     66
                R4 = F4                                                                VISRHS     67
             32 CONTINUE                                                               VISRHS     68
75           C                                                                         VISRHS     69
                DO 33 K=2,KM                                                           VISRHS     70
                DO 33 N=1,4                                                            VISRHS     71
             33 S(J,K,N) = S(J,K,N) + F(K,N)                                           VISRHS     72
             30 CONTINUE                                                               VISRHS     73
80              RETURN                                                                 VISRHS     74
                END                                                                    VISRHS     75
```

```
      SUBROUTINE VISMAT(IJ)                                              VISMAT     2
      COMMON/BASE/NMAX,JMAX,KMAX,JM,KM,DT,FSMACH,EPS,GAMMA,GAMI,SMU,HO,  BASE       2
     1  FV(4),FD(4),PE,PI,Z(80),NP,METH,ALPHA,INVIS,IPLOT,RESID          BASE       3
     2,  CNBR,IREGO,ISTORE,NF,NB,JTAIL1,JTAIL2,IOSCIL,XOSCIL,IUPWND      BASE       4
     3 ,  LAMIN,SMUIM,VARA,VARB,VARC                                     BASE       5
      COMMON/VARS/ Q(78,36,4),XY(78,36,4),P(78,36)                       VARS       2
      COMMON/LARGE/X(78,36),Y(78,36),S(78,36,4),XIT(78,36),ETT(78,36)    VARS       3
      LEVEL 2,X,Y,S,XIT,ETT                                              VARS       4
      COMMON/BTRID/ A(80,4,4),B(80,4,4),C(80,4,4),D(80,4,4),DU(80,4,4),  VISMAT     5
     1   F(80,4)                                                         VISMAT     6
      COMMON/ VISC/ U(80),V(80),C1(80),C2(80),C3(80),C4(80),TC(80)       VISMAT     7
      COMMON/MUTUR/ TURMU(78,36),SNOR(80),DELST(80),THO(80),THI(80)      VISMAT     8
      COMMON/ KINMU/ FMU(80)                                             VISMAT     9
      DIMENSION RR(80)                                                   VISMAT    10
C****CALCULATES THE JACOBIAN MATRICES FOR VISCOUS FLOW IN THE Y-SWEEP     INLET    426
C     OF THE INTEGRATION PROCESS                                         INLET    427
      DATA PR,PRTR,FRT/ 72. 8,1.333333/                                  VISMAT    11
      CALL MUK(IN,IJ)                                                    VISMAT    12
C                                                                        VISMAT    13
      HRE = HO/RE                                                        VISMAT    14
      GPR = GAMMA/PR                                                     VISMAT    15
      DO 10 K=1,KMAX                                                     VISMAT    16
      R1 = 1./Q(IJ,K,1)                                                  VISMAT    17
      EXS = XY(IJ,K,3)**2                                                VISMAT    18
      EYS = XY(IJ,K,4)**2                                                VISMAT    19
      EXY = XY(IJ,K,3)*XY(IJ,K,4)+.3333333                               VISMAT    20
      TURM = TURMU(IJ,K)                                                 VISMAT    21
      VNU = FMU(K) + TURM                                                VISMAT    22
      GKAP = FMU(K) + PRTR*TURM                                          VISMAT    23
      DJAC = HRE/P(IJ,K)                                                 VISMAT    24
      VNUJAC = VNU*DJAC                                                  VISMAT    25
      C1(K) = VNUJAC*( FRT*EXS + EYS)                                    VISMAT    26
                                                                         VISMAT    27
      C1(K) = VNUJAC*( FRT*EXS + EYS)                                    VISMAT    28
      C2(K) = VNUJAC*EXY                                                 VISMAT    29
      C3(K) = VNUJAC*( EXS + FRT*EYS)                                    VISMAT    30
      C4(K) = GPR*DJAC*( EXS + EYS)+GKAP                                 VISMAT    31
      RR(K) = R1                                                         VISMAT    32
      U(K) = R1*Q(IJ,K,2)                                                VISMAT    33
      V(K) = R1*Q(IJ,K,3)                                                VISMAT    34
      TC(K) = Q(IJ,K,4)*R1 - .5*( U(K)**2 + V(K)**2)                     VISMAT    35
   10 CONTINUE                                                           VISMAT    36
      DO 20 K=2,KMAX                                                     VISMAT    37
      KR = K -1                                                          VISMAT    38
      CC1 = .5*(C1(KR) + C1(K))                                          VISMAT    39
      CC2 = .5*(C2(KR)+ C2(K))                                           VISMAT    40
      CC3 = .5*(C3(KR)+ C3(K))                                           VISMAT    41
      CC4 = .5*(C4(KR)+ C4(K))                                           VISMAT    42
      D(K,2,1) = -.5*( CC1*U(KR) + CC2*V(KR))*RR(KR)                     VISMAT    43
      DU(K,2,1) = -.5*( CC1*U(K) + CC2*V(K))*RR(K)                       VISMAT    44
      D(K,2,2) = CC1*RR(KR)                                              VISMAT    45
      DU(K,2,2) = CC1*RR(K)                                              VISMAT    46
      D(K,2,3) = CC2*RR(KR)                                              VISMAT    47
      DU(K,2,3) = CC2*RR(K)                                              VISMAT    48
      D(K,2,4) = 0.                                                      VISMAT    49
      DU(K,2,4) = 0.                                                     VISMAT    50
      D(K,3,1) = -.5*( CC2*U(KR) + CC3*V(KR))*RR(KR)                     VISMAT    51
```

```
      DUIK,3,1) = - ( CC2*UIK) + CC3*VIK))*RR(K)                        VISMAT   52
      DIK,3,2) = CC2*RR(KR)                                             VISMAT   53
60    DUIK,3,2) = CC2*RR(K)                                             VISMAT   54
      DIK,3,3) = CC3*RR(KR)                                             VISMAT   55
      DUIK,3,3) = CC3*RR(K)                                             VISMAT   56
      DIK,3,4) = 0                                                      VISMAT   57
      DUIK,3,4) = 0                                                     VISMAT   58
65    DIK,4,1) = -( CC4*TC(KR) *CC1*UIKR)**2 +2 *CC2*UIKR)*VIKR) +      VISMAT   59
     1   CC3*VIKR)**2)*RR(KR)                                           VISMAT   60
      DUIK,4,1) = - (CC4*TC(K) + CC1*UIK)**2 +2 *CC2*UIK)*VIK) +        VISMAT   61
     1  CC3*VIK)**2) *RR(K)                                            VISMAT   62
      DIK,4,2) = -CC4*UIKR)*RR(KR) - DIK,2,1)                           VISMAT   63
70    DUIK,4,2) = -CC4*UIK)*RR(K) - DUIK,2,1)                           VISMAT   64
      DIK,4,3) = -CC4*VIKR)*RR(KR) - DIK,3,1)                           VISMAT   65
      DUIK,4,3)= -CC4*VIK)*RR(K) -DUIK,3,1)                             VISMAT   66
      DIK,4,4) = CC4*RR(KR)                                             VISMAT   67
      DUIK,4,4) = CC4 *RR(K)                                            VISMAT   68
75  20 CONTINUE                                                         VISMAT   69
      DO 30 K=2,KM                                                      VISMAT   70
      KP = K+1                                                          VISMAT   71
      DO 31 N=2,4                                                       VISMAT   72
      DO 31 M=1,4                                                       VISMAT   73
80    A(K,N,M) = A(K,N,M) - DIK,N,M)                                    VISMAT   74
      B(K,N,M) = B(K ,N,M)   -DIKP,N,M) -DUIK,N,M)                      VISMAT   75
      C(K,N,M) = C(K,N,M) - DUIKP,N,M)                                  VISMAT   76
   31 CONTINUE                                                          VISMAT   77
   30 CONTINUE                                                          VISMAT   78
85    RETURN                                                            VISMAT   79
      END                                                               VISMAT   80
```

```
      SUBROUTINE EIGEN(IN)                                              INLET  428
      COMMON/BASE/NMAX,JMAX,KMAX,JM,KM,DT,FSMACH,EPS,GAMMA,GAMI,SMU,HO, BASE    2
     1  FV(4),FD(4),RE,PI,ZIBOI,NP,METH,ALPHA,INVIS,IPLOT,RESID         BASE    3
     2, CNBR,IREGO,ISTOPS,NF,NB,JTAIL1,JTAIL2,IOSCIL,XOSCIL,IUPWND     BASE    4
     3 , LAMIN,SMUIM,VARA,VARB,VARC                                     BASE    5
      COMMON/VARS/ Q(78,36,4),XY(78,36,4),P(78,36)                      VARS    2
      COMMON/LARGE/X(78,36),Y(78,36),S(78,36,4),XIT(78,36),ETT(78,36)   VARS    3
      LEVEL 2,X,Y,S,XIT,ETT                                             VARS    4
      JT = 1                                                            EIGEN   5
C****THIS SUBROUTINE CALCULATES THE EIGENVALUES OF K1*A+K2*B  TO FIND   INLET  429
C     ALLOWABLE TIME STEP FOR GIVEN COURANT NUMBER                      INLET  430
      KT = 1                                                            EIGEN   6
      SIGMAX = 0                                                        EIGEN   7
      DO 1 K=2,KM                                                       EIGEN   8
      DO 1 J=2,JM                                                       EIGEN   9
      RI = 1./Q(J,K,1)                                                  EIGEN  10
      U = Q(J,K,2)*RI                                                   EIGEN  11
      V = Q(J,K,3)*RI                                                   EIGEN  12
      ROOT=GAMI*(GAMMA*(Q(J,K,4)*RI-0.5*(U*U+V*V))                      INLET  431
      IF(ROOT .LT. 0.0)ROOT=0.0                                         INLET  432
      SNOSP=SQRT(ROOT)                                                  INLET  433
      SIGA=ABS(U*XY(J,K,1)+V*XY(J,K,2)) +SNOSP*SQRT(XY(J,K,1)**2+       EIGEN   14
     1  XY(J,K,2)**2)                                                   EIGEN   15
      SIGB = ABS(U*XY(J,K,3) +V*XY(J,K,4)) + SNOSP*SQRT(XY(J,K,3)**2    EIGEN   16
     1  + XY(J,K,4)**2)                                                 EIGEN   17
C     NOTE XIT AND ETT NOT IN CALCULATION                               EIGEN   18
      SIGAB = AMAX1(SIGA,SIGB)                                          EIGEN   19
      IF( SIGAB - SIGMAX)1,1,3                                          EIGEN   20
    3 JT = J                                                            EIGEN   21
      KT = K                                                            EIGEN   22
      SIGMAX = SIGAB                                                    EIGEN   23
    1 CONTINUE                                                          EIGEN   24
      NMCR=10000                                                        INLET  434
      IF(IN.GE.NMCR)CNBR= 9                                             INLET  435
      DT=CNBR/SIGMAX                                                    INLET  436
      HO= 5*DT                                                          INLET  437
      SMU=DT*12                                                         INLET  438
      SMUIM=3.2*SMU                                                     INLET  439
      WRITE(6,600)JT,KT,DT,CNBR,        SMU,SMUIM                       INLET  440
  600 FORMAT(1H ,29H J,K,DT,CNBR,       SMU,SMUIMP,2I5,5F15.10)         INLET  441
      CNBR1=DT*SIGMAX                                                   INLET  442
      WRITE(6,601)JT,KT,CNBR1                                           INLET  443
  601 FORMAT(1X,*JT,KT,CNBR1=*,2I5,E12.5)                               INLET  444
      RETURN                                                            EIGEN   28
      END                                                               EIGEN   29
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SUBROUTINE CPPLOT     76/76   OPT=2 TRACE                FTN 4.6+460      01/09/80  11.58.39      PAGE     1

                      SUBROUTINE CPPLOT                                                    CPPLOT      2
                      COMMON/BASE/NMAX,JMAX,KMAX,JM,KM,DT,FSMACH,EPS,GAMMA,GAMI,SMU,HO,    BASE        2
                     1  FV(4),FD(4),PI,PI_2(90),NP,METH,ALPHA,INVIS,IPLOT,RESID           BASE        3
                     2, CNBR,IREGO,ISTORE,NF,NB,JTAIL1,JTAIL2,IOSCIL,XOSCIL,IUPWND       BASE        4
                     3  , LAMIN,SMUIN,VARA,VARB,VARC                                     BASE        5
                      COMMON/VARS/ Q(78,36,4),XY(78,36,4),P(78,36)                         VARS        2
                      COMMON/LARGE/X(78,36),Y(78,36),S(78,36,4),XIT(78,36),ETT(78,36)      VARS        3
                      LEVEL 2,X,Y,S,XIT,ETT                                                VARS        4
                      DIMENSION XX(120)                                                    CPPLOT      5
                C****THIS SUBROUTINE PLOTS THE NORMALIZED PRESSURE COEFF                   INLET     445
                      CPMAX =-1000000                                                      CPPLOT      6
                      CPMIN = 1000000                                                      CPPLOT      7
                      DO 10  J = JTAIL1,JTAIL2                                             CPPLOT      8
                      JJ=  J = 1 - JTAIL1                                                  CPPLOT      9
                      K = 1                                                                CPPLOT     10
                      PP = P(J,K)+GAMMA*GAMI*(Q(J,K,4)- 5*(Q(J,K,2)**2+Q(J,K,3)**2)        CPPLOT     11
                     1  /Q(J,K,1))                                                        CPPLOT     12
                C       CHANGE SIGN OF CP TO PLOT NEGATIVE UPWARD                        CPPLOT     13
                      CP = -(PP-1 )/(  5 GAMMA*FSMACH**2)                                  CPPLOT     14
                      IF( CP  GT  CPMAX) CPMAX = CP                                        CPPLOT     15
                      IF( CP  LT  CPMIN) CPMIN = CP                                        CPPLOT     16
                      XX(JJ) = X(J,K) + XOSCIL                                             CPPLOT     17
                   10 Z(JJ)=CP                                                             CPPLOT     18
                      IIMIN = 11 2*CPMIN                                                   CPPLOT     19
                      IIMAX = 11 2*CPMAX                                                   CPPLOT     20
                      CPMAX = IIMAX+ 1                                                     CPPLOT     21
                      CPMIN = IIMIN- 1                                                     CPPLOT     22
                      CPT = 1 0                                                            CPPLOT     23
                      CPN = 1 2 - CPMIN                                                    CPPLOT     24
                      IF( CPN GT 0 ) CPMIN = -1 2                                          CPPLOT     25
                      IF(CPMAX LT CPT) CPMAX = CPT                                         CPPLOT     26
                      CALL AXIS( 0 ,1 ,CPMIN,CPMAX,10,10)                                  CPPLOT     27
                      CALL LABEL(1HX,1,2HCP,2)                                             CPPLOT     28
                      JNBR = JTAIL2 - JTAIL1 +1                                            CPPLOT     29
                      CALL PLOT(XX,Z,JNBR,0)                                               CPPLOT     30
                C    PLOT AIRFOIL ON BOTTOM OF PLOT                                      CPPLOT     31
                      YMIN = 1000                                                          CPPLOT     32
                      DO 20 J = JTAIL1,JTAIL2                                              CPPLOT     33
                      JJ = J = 1 - JTAIL1                                                  CPPLOT     34
                      Z(JJ) = Y(J,1)                                                       CPPLOT     35
                      IF( Z(JJ)  LT  YMIN) YMIN = Z(JJ)                                    CPPLOT     36
                   20 CONTINUE                                                             CPPLOT     37
                      DO 22 J = JTAIL1,  JTAIL2                                            CPPLOT     38
                C SCALE Y TO GIVE TRUE AIRFOIL SHAPE ON STRETCHED COOR   CHORD IS 1      CPPLOT     39
                      JJ = J = 1 - JTAIL1                                                  CPPLOT     40
                   22 Z(JJ)= CPMIN +(Z(JJ)-YMIN)*( CPMAX-CPMIN)                           CPPLOT     41
                      CALL PLOT(XX,Z,JNBR,0)                                               CPPLOT     42
                      RETURN                                                               CPPLOT     43
                      END                                                                  CPPLOT     44
```

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      SUBROUTINE  CLCD(NSCAL)                                                CLCD       2
      COMMON/BASE/NMAX ,JMAX ,KMAX ,JM,KM ,DT ,FSMACH,EPS,GAMMA,GAM1 ,SMU,HD,  BASE       2
     1  FV(4),FD(4),RE ,PI ,Z(80),NP ,METH ,ALPHA, INVIS, IPLOT,RESID          BASE       3
     2, CNBR ,IREGD,ISTORE,NF ,NB ,JTAIL1 ,JTAIL2 ,IOSCIL,XOSCIL, IUPWND       BASE       4
     3 , LAMIN,SMUIM ,VARA ,VARB ,VARC                                         BASE       5
      COMMON/VARS/ Q(78 ,36 ,4) ,XY(78 ,36 ,4) ,P(78 ,36)                    VARS       2
      COMMON/LARGE/X(78 ,36) ,Y(78 ,36) ,S(78 ,36 ,4) ,XIT(78 ,36) ,ETT(78 ,36)  VARS       3
      LEVEL 2,X,Y,S,XIT,ETT                                                  VARS       4
C                                                                            CLCD       5
C   ROUTINE SUPPLIES FORCE AND MOMENT COEFFS  ON AIRFOIL SURFACE             CLCD       6
      CPC = 2 /(GAMMA*FSMACH**2)                                             CLCD       7
C    COMPUTE CP AT GRID POINTS AND STORE IN Z ARRAY                          CLCD       8
      DO 10 J=JTAIL1 ,JTAIL2                                                 CLCD       9
      PP = GAM1*( Q(J,1,4)- 5*(Q(J,1,2)**2+Q(J,1,3)**2)/Q(J,1,1))            CLCD      10
      IF( NSCAL .EQ.0) PP = PP*P(J,1)                                        CLCD      11
   10 Z(J) =  (PP*GAMMA -1 )*CPC                                             CLCD      12
C     COMPUTE NORMAL FORCE COEFFICIENT AND CHORD DIRECTED FORCE COEFF         CLCD      13
C    CHORD TAKEN AS ONE IN ALL CASES                                         CLCD      14
      CN = 0                                                                 CLCD      15
      CC = 0                                                                 CLCD      16
      CMLE = 0                                                               CLCD      17
      SREF=3 056                                                             INLET     446
      ALREF=3 056                                                            INLET     447
      JTP=35                                                                 INLET     448
      DO 11 J=JTP,JTAIL2                                                     CLCD      19
      CPAV = ( Z(J) + Z(J-1))* 5                                             CLCD      20
      CN=CN-CPAV*(X(J,1)-X(J-1,1))/SREF                                      INLET     449
      CC=CC+CPAV*(Y(J,1)-Y(J-1,1))/SREF                                      INLET     450
      CMLE=CMLE+CPAV*(X(J,1)+X(J-1,1))*0 5*(X(J,1)-X(J-1,1)) /SREF/ALREF     INLET     451
   11 CONTINUE                                                               CLCD      24
      CL = CN*COS(ALPHA*PI/180 )-CC*SIN(ALPHA*PI/180 )                       CLCD      25
      CD = CN*SIN(ALPHA*PI/180 ) + CC*COS(ALPHA*PI/180 )                     CLCD      26
      CMQC = CMLE + 25*CN                                                    CLCD      27
      WRITE(6,600)                                                           CLCD      28
  600 FORMAT(1HO, 48H FORCE AND MOMENT COEFFS   CN,CC,CMLE,CMQC,CL,CD  )     CLCD      29
      WRITE(6,602) CN,CC,CMLE,CMQC,CL,CD                                     CLCD      30
  602 FORMAT(1HO, 6F16 6)                                                    CLCD      31
      RETURN                                                                 CLCD      32
      END                                                                    CLCD      33
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SUBROUTINE SHCKOP     76/76   OPT=2 TRACE                FTN 4.6+460      01/09/80  11.58.39      PAGE     1

                      SUBROUTINE SHCKOP(IA,IB)                                  SHCKOP     2
                      COMMON/UPWND/ EB(80),EF(80)                               SHCKOP     3
                C                                                               SHCKOP     4
                C      SUBSONIC FREE STREAM ASSUMED                             SHCKOP     5
                C                                                               SHCKOP     6
                C      ADJUST SHOCK POINT OPERATORS                             SHCKOP     7
                      DO 10 I=IA,IB                                             SHCKOP     8
                      EB(I) = EB(I)*EB(I+1)                                     SHCKOP     9
                      M = IA + IB - I                                           SHCKOP    10
             10    10 EF(M) = EF(M)*EF(M-1)                                     SHCKOP    11
                C      TURN OFF HOST EPS FLAG SAVE JUST BEFORE SHOCK            SHCKOP    12
                      IFLG = 0                                                  SHCKOP    13
                      DO 20 I=IA,IB                                             SHCKOP    14
                      J = IA+IB -I                                              SHCKOP    15
             15       IF( EB(J)) 22,22,21                                       SHCKOP    16
                   21 IFLG = IFLG +1                                            SHCKOP    17
                      IF( IFLG GT 3  ) EB(J) = 0                                SHCKOP    18
                      GO TO 20                                                  SHCKOP    19
                   22 IFLG = 0                                                  SHCKOP    20
             20    20 CONTINUE                                                  SHCKOP    21
                      RETURN                                                    SHCKOP    22
                      END                                                       SHCKOP    23
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      SUBROUTINE MUKIN(IJ)                                              MUKIN     2
C****CALCULATES LAMINAR VISCOSITY VIA SUTHERLAND EQUATION               INLET   452
      COMMON/IK1/JINPL                                                  INLET   453
      COMMON/BASE/NMAX,JMAX,KMAX,JM,KM,DT,FSMACH,EPS,GAMMA,GAMI,SMU,HO, BASE     2
     1  FV(4),FD(4),RE,PI,Z(80),NP,METH,ALPHA,INVIS,IPLOT,RESID          BASE     3
     2, CNBR,IPEGO,ISTORE,NF,NB,JTAIL1,JTAIL2,IOSCIL,XOSCIL,IUPWND      BASE     4
     3 , LAMIN,SMUIM,VARA,VARB,VARC                                     BASE     5
      COMMON/VARS/ Q(78,36,4),XY(78,36,4),P(78,36)                      VARS     2
      COMMON/LARGE/X(78,36),Y(78,36),S(78,36,4),XIT(78,36),ETT(78,36)   VARS     3
      LEVEL 2,X,Y,S,XIT,ETT                                             VARS     4
      COMMON/ KINMU/ FMU(80)                                            MUKIN    5
      DATA INIT/0/                                                      MUKIN    6
C                                                                       MUKIN    7
C     SUTHERLAND EQUATION                                               MUKIN    8
      KEDGE=KMAX                                                        INLET  454
      IF(IJ.GE.JINPL)KEDGE=KMAX-3                                       INLET  455
      IF(.NOT.INIT.GT.0)GO TO 9                                         MUKIN   10
    8 INIT = 10                                                         MUKIN   11
      TINF=560./(1.+GAMI*.5*FSMACH**2)                                  INLET  456
      C2B = 198.6/TINF                                                  MUKIN   13
      C2BP = C2B + 1.                                                   MUKIN   14
    9 CONTINUE                                                          MUKIN   15
C                                                                       MUKIN   16
      DO 10 K=1,KEDGE                                                   MUKIN   17
      RINV = 1./Q(IJ,K,1)                                               MUKIN   18
      QSQR = (Q(IJ,K,2)**2 + Q(IJ,K,3)**2)*RINV                         MUKIN   19
      TT = GAMMA*GAMI*(Q(IJ,K,4) - .5*QSQR)*RINV                        MUKIN   20
      IF(TT.LT.0.0)TT=0.0                                               INLET  457
      FMU(K) = C2BP*TT**1.5/(C2B+TT)                                    MUKIN   21
   10 CONTINUE                                                          MUKIN   22
      IF(IJ.LT.JINPL)GO TO 30                                           INLET  458
      KE = KEDGE +1                                                     MUKIN   23
      DO 20 K=KE,KMAX                                                   MUKIN   24
   20 FMU(K) = FMU(K-1)                                                 MUKIN   25
   30 CONTINUE                                                          INLET  459
      RETURN                                                            MUKIN   26
      END                                                               MUKIN   27
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SUBROUTINE TRIB      76/76   OPT=2 TRACE                FTN 4.6+460      01/09/80  11.58.39      PAGE  1

                      SUBROUTINE TRIB(A,B,C,X,F,NL,NU)                                  TRIB      2
                      DIMENSION A(2),B(2),C(2),X(2),F(2)                                TRIB      3
                C*****INVERTS TRIDIAGONAL MATRICES                                      INLET   460
                      X(NL)=C(NL)/B(NL)                                                 TRIB      4
                      F(NL)=F(NL)/B(NL)                                                 TRIB      5
                      NLP1 = NL +1                                                      TRIB      6
                      DO 1 J=NLP1,NU                                                    TRIB      7
                      Z=1./(B(J)-A(J)*X(J-1))                                           TRIB      8
                      X(J)=C(J)*Z                                                       TRIB      9
                    1 F(J)=(F(J)-A(J)*F(J-1))*Z                                         TRIB     10
                      NUPNL=NU+NL                                                       TRIB     11
                      DO 2 J1=NLP1,NU                                                   TRIB     12
                      J=NUPNL-J1                                                        TRIB     13
                    2 F(J)=F(J)-X(J)*F(J+1)                                             TRIB     14
                      RETURN                                                            TRIB     15
                      END                                                               TRIB     16
```

```
      SUBROUTINE MUTUR                                                  MUTUR      2
      COMMON/BASE/NMAX,JMAX,KMAX,JM,KM,DT,FSMACH,EPS,GAMMA,GAMI,SMU,HD, MUTUR      3
     1  FV(4),FD(4),RE,PI,Z(80),NP,METH,ALPHA,INVIS,IPLOT,RESID         MUTUR      4
     2, CNER,IREGD,ISTORE,NF,NB,JTAIL1,JTAIL2,IOSCIL,KOSCIL,IUPWND     MUTUR      5
     3 , LAMIN,SMUIM,VARA,VARB,VARC                                     MUTUR      6
      COMMON/VARS/ Q(78,36,4),XY(78,36,4),P(78,36)                      MUTUR      7
      COMMON/LARGE/X(78,36),Y(78,36),S(78,36,4),XIT(78,36),ETT(78,36)   MUTUR      8
      LEVEL 2,X,Y,S,XIT,ETT                                             MUTUR      9
      COMMON/MUTUR/ TURMU(78,36),SNOR(80),DELST(80),THO(80),THI(80)     MUTUR     10
      COMMON /KINMU/ FMU(80)                                            MUTUR     11
      DIMENSION UU(80)                                                  MUTUR     12
      DIMENSION TAS(80)                                                 MUTUR     13
      DATA TURMU/ 2808*0 /                                              MUTUR     14
      DATA F27,KEDGE /1.6,25/                                           MUTUR     15
      DATA FK,FKK,YDUMF /0.4,0.0168,1.0/                                MUTUR     16
      DATA FKLEB /0.3/                                                  MUTUR     17
C                                                                       MUTUR     18
C****THIS SUBROUTINE CALCULATES TURBULENT VISCOSITY FROM CEBECI-BALDWIN 'NLET    461
C  NOTE P(J,K) STORES TRANSFORM JACOBIAN BY WHICH DEP VARS ARE DIVIDED   MUTUR     19
      DO 80 J = 2,JM                                                    MUTUR     20
C                                                                       MUTUR     21
C     FIND VORTICITY TAS(K) AND TOTAL VELOCITY UTOT(K)                  MUTUR     22
      DO 11 K = 1,KM                                                    MUTUR     23
      TAU = 5*(XY(J,K,4)*XY(J,K+1,4))*(Q(J,K+1,2)/Q(J,K+1,1)-Q(J,K,2)   MUTUR     24
     1 /Q(J,K,1))-0.5*(XY(J,K,3)*XY(J,K+1,3))*(Q(J,K+1,3)/Q(J,K+1,1)    MUTUR     25
     2 -Q(J,K,3)/Q(J,K,1))                                              MUTUR     26
      TAX1= 5*XY(J,K   ,2)*(Q(J-1,K   ,2)/Q(J-1,K   ,1) -Q(J-1,K   ,2)  MUTUR     27
     1 /Q(J-1,K,1))                                                     MUTUR     28
     2     - 5*XY(J,K   ,1)*(Q(J-1,K   ,3)/Q(J-1,K   ,1) -Q(J-1,K   ,3)  MUTUR     29
     1 /Q(J-1,K,1))                                                     MUTUR     30
      TAX2= 5*XY(J,K+1,2)*(Q(J-1,K+1,2)/Q(J-1,K+1,1) -Q(J-1,K+1,2)      MUTUR     31
     1 /Q(J-1,K+1,1))                                                   MUTUR     32
     2     - 5*XY(J,K+1,1)*(Q(J-1,K+1,3)/Q(J-1,K+1,1) -Q(J-1,K+1,3)     MUTUR     33
     1 /Q(J-1,K+1,1))                                                   MUTUR     34
      TAX1 = 0.5*(TAX1 + TAX2)                                          MUTUR     35
      TAS(K) = TAU + TAX1                                               MUTUR     36
      UTOT = Q(J,K,2)**2 + Q(J,K,3)**2                                  MUTUR     37
      UTOT = SQRT(UTOT)/Q(J,K,1)                                        MUTUR     38
      UU(K) = UTOT                                                      MUTUR     39
      TURMU(J,K) = 0.0                                                  MUTUR     40
   11 CONTINUE                                                          MUTUR     41
C                                                                       MUTUR     42
C      COMPUTE RA                                                       MUTUR     43
      K=1                                                               MUTUR     44
      VMU =  .5*( FMU(1) + FMU(2))                                      MUTUR     45
      TAU = ABS(TAS(K))                                                 MUTUR     46
      RA = SQRT( RE*P(J,K)*Q(J,K,1)*TAU/VMU)/26                         MUTUR     47
      IF(J  LT  JTAIL1  OR  J  GT  JTAIL2) RA = 1000.*RA                MUTUR     48
C                                                                       MUTUR     49
C      COMPUTE NORMAL DISTANCE SNOR(K) AND Y+DUDY                       MUTUR     50
      SNOR(1) = 0                                                       MUTUR     51
      YDUM = 0.0                                                        MUTUR     52
      UMIN = UU(1)                                                      MUTUR     53
      YDUS = 0.0                                                        MUTUR     54
      DO 20 K = 2,KM                                                    MUTUR     55
      IF(UU(K)  LT  UMIN) UMIN = UU(K)                                  MUTUR     56
      SCIS = ABS(XY(J,K-1,3)*XY(J,K,3)+XY(J,K-1,4)*XY(J,K,4))           MUTUR     57
```

```
                  SCAL = 1.0/SQRT(SCIS)                                    MUTUR   58
                  SNOR(K) = SNOR(K-1) + SCAL                               MUTUR   59
   60             IF(K .GT. 2) GO TO 18                                    MUTUR   60
                  KM2 = 1                                                  MUTUR   61
                  YDUM = 1.E-3                                             MUTUR   62
                  UM = YDUM                                                MUTUR   63
                  YM = 0.5*SNOR(2)                                         MUTUR   64
   65          18 CONTINUE                                                 MUTUR   65
                  SNORA = 0.5*(SNOR(K) + SNOR(K-1))                        MUTUR   66
                  YDU = SNORA*ABS(TAS(K-1))*(1. -EXP(-RA*SNORA))           MUTUR   67
                  IF(K .GT. KEDGE) GO TO 20                                MUTUR   68
                  IF(YDU .LT. YDUM) GO TO 20                               MUTUR   69
   70             KM2 = K - 1                                              MUTUR   70
                  YDUM = YDU                                               MUTUR   71
                  UM = 0.5*(UU(K-1) + UU(K))                               MUTUR   72
                  YM = SNORA                                               MUTUR   73
               20 CONTINUE                                                 MUTUR   74
   75          C                                                           MUTUR   75
               C     INTERPOLATE TO FIND YM, YDUM, AND UM                  MUTUR   76
                  IF(KM2 .LT. 2 .OR. KM2 .GT. KEDGE-1) GO TO 22            MUTUR   77
                  YM3 = 0.5*(SNOR(KM2-1) + SNOR(KM2-2))                    MUTUR   78
                  YM1 = 0.5*(SNOR(KM2-1) + SNOR(KM2))                      MUTUR   79
   80             YDUM1 = YM1*ABS(TAS(KM2-1))*(1.0 - EXP(-RA*YM1))         MUTUR   80
                  YDUM3 = YM3*ABS(TAS(KM2-1))*(1.0 - EXP(-RA*YM3))         MUTUR   81
                  C2 = YDUM - YDUM1                                        MUTUR   82
                  C3 = YDUM3 - YDUM                                        MUTUR   83
                  DY1 = YM - YM1                                           MUTUR   84
   85             DY3 = YM3 - YM                                           MUTUR   85
                  AM = (DY3*DY3*C2 + DY1*DY1*C3)/(DY1*DY3*(DY1+DY3))       MUTUR   86
                  BM = (DY1*C3 - DY3*C2)/(DY1*DY3*(DY1 + DY3))             MUTUR   87
                  IF(BM .GE. 0.) GO TO 22                                  MUTUR   88
                  YMM = YM - 0.5*AM/BM                                     MUTUR   89
   90             YDU = YDUM - 0.25*AM*AM/BM                               MUTUR   90
                  YMM = YM - 0.5*AM/BM                                     MUTUR   91
                  IF(YDU .LT. YDUM .OR. YMM .LT. YM1 .OR. YMM .GT. YM3) GO TO 22   MUTUR   92
                  YDUM = YDU                                               MUTUR   93
                  YM = YMM                                                 MUTUR   94
   95             IF(YM .GT. SNOR(KM2+1)) KM2 = KM2 + 1                    MUTUR   95
                  IF(YM .LT. SNOR(KM2)) KM2 = KM2 - 1                      MUTUR   96
                  UM = ((SNOR(KM2+1) - YM)*UU(KM2)+(YM-SNOR(KM2))*UU(KM2+1))   MUTUR   97
                 1 /(SNOR(KM2+1) - SNOR(KM2))                              MUTUR   98
               22 CONTINUE                                                 MUTUR   99
  100          C                                                           MUTUR  100
               C     COMPUTE OUTER EDDY VISCOSITY                          MUTUR  101
                  DO 25 K=1,KEDGE                                          MUTUR  102
                  SNOR(K) = 0.5*(SNOR(K) + SNOR(K+1))                      MUTUR  103
                  FFC = FKK*F27*RE*Q(J,K,1)*P(J,K)                         MUTUR  104
  105             TMO(K) = FFC*YM*YDUM                                     MUTUR  105
                  FFCWK = YDUM*YDUM*FFC                                    MUTUR  106
                  UDIFF = ABS(UM - UMIN)                                   MUTUR  107
                  IF(YDUM .GT. UDIFF*YDUM) TMO(K) = FFCWK*YM*UDIFF*UDIFF/YDUM   MUTUR  108
                  FIA = FKLEB*SNOR(K)/YM                                   MUTUR  109
  110             IF(FIA .GT. 1.E5) FIA = 1.E5                             MUTUR  110
                  FI = 1.0 + 5.5*FIA**6                                    MUTUR  111
                  TMO(K) = TMO(K)/FI                                       MUTUR  112
                  TMO(K) = ABS(TMO(K))                                     MUTUR  113
               25 CONTINUE                                                 MUTUR  114
```

```
      C
      C      COMPUTE INNER EDDY VISCOSITY
            DO 30 K=1,KEDGE
            TAU = ABS(TAS(K))
            TMI(K) =P(I,J,K)+Q(I,J,K,1)*RE*TAU*(FK*SNOR(K)*(1 -EXP(-RA
           1  *SNOR(K))))**2
            TMI(K) = ABS(TMI(K))
         30 CONTINUE
      C
      C      LOAD VISCOSITY COEFFS  INTO ARRAY, USE INNER VALUE UNTIL
      C      MATCH POINT IS REACHED
            K = 1
         40 TURMU(I,J,K) = TMI(K)
            K = K +1
            IF( K GT  KEDGE) GO TO 10
            IF( TMI(K)  LE  TMO(K)) GO TO 40
         41 TURMU(I,J,K) = TMO(K)
            K = K +1
            IF( K LE  KEDGE) GO TO 41
         10 CONTINUE
      C
      C      REARRANGE TURMU(K) SUCH THAT WHEN AVERAGED AT K AND K+1
      C         THE CORRECT MIDWAY VALUE WILL BE OBTAINED
            SMP = TURMU(I,J,1)
            DO 60 K = 2,KMAX
            TURMS = TURMU(I,J,K)
            TURMU(I,J,K) = 2.0*SMP - TURMU(I,J,K-1)
         60 SMP = TURMS
         80 CONTINUE
            RETURN
            END
```

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MUTUR  115
MUTUR  116
MUTUR  117
MUTUR  118
MUTUR  119
MUTUR  120
MUTUR  121
MUTUR  122
MUTUR  123
MUTUR  124
MUTUR  125
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MUTUR  133
MUTUR  134
MUTUR  135
MUTUR  136
MUTUR  137
MUTUR  138
MUTUR  139
MUTUR  140
MUTUR  141
MUTUR  142
MUTUR  143
MUTUR  144
MUTUR  145
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APPENDIX B

SOURCE LISTING OF THE GRID GENERATION PROGRAM

```
      PROGRAM MAIN(INPUT,TAPE5=INPUT,OUTPUT,TAPE6=OUTPUT,TAPE48,TAPE8)
C
C     LOGICAL UNIT NUMBERS USED IN THIS PROGRAM
C
C     5  -  READ INPUT DATA CARDS
C     6  -  WRITE PRINTER OUTPUT
C     8  -  UNFORMATTED WRITE OF FINAL SOLUTION GRID
C     48 -  SC4020 PLOTTER DATA
C
      COMMON/TCOM/ITITLE(8)
C
      DIMENSION XB(140),YB(140),X(140,80),Y(140,80)
      DIMENSION LINE(8)
      DIMENSION XP(140,80),YP(140,80)
      DIMENSION NP(140)
C
C     GRIDS ARE PRESENTLY LIMITED BY DIMENSION SIZE TO 140 POINTS
C     IN XI DIRECTION AND 80 POINTS IN ETA DIRECTION.  THESE
C     DIMENSION SIZES ARE FOUND IN SUBROUTINES INNER, OUTER,
C     RELAX, CLUSTR, EPSIL, AND PLAWT AS WELL AS HERE IN THE
C     MAIN PROGRAM.
C
      DATA PI/3.141592654/
C
C     READ IN PARAMETERS
      READ(5,101) JWAKE,KMAX,MAXIT,IDSPLY
      READ(5,102)XGMX,XGMN,YMAX,YMIN,XNOSE,XTAIL,XRAMP
      READ(5,102)  DY1
      READ(5,102)  XORG,YORG,ETACD,BETA
      READ(5,102)  OMEGA
      READ(5,102)  DY2
      IF(IDSPLY .EQ. 1)CALL READIN
      READ(5,100)ITITLE
      READ(5,100)  LINE
C
      WRITE(6,112)JWAKE,KMAX,MAXIT,XGMX,XGMN,YMAX,YMIN,XNOSE,XTAIL,
     *XRAMP
      WRITE(6,113) DY1,XORG,YORG,ETACD,BETA,OMEGA,DY2
      WRITE(6,137)ITITLE
      WRITE(6,109)  LINE
      ETAC=ETACD*PI/180
C
C     READ IN AIRFOIL SHAPE
      NBOD=70
      DO 2 N=1,NBOD
      READ(5,102)XB(N),YB(N)
    2 CONTINUE
      WRITE(6,103)
      WRITE(6,104)  (N,XB(N),YB(N),N=1,NBOD)
C
C     DISTRIBUTE POINTS ON INNER AND REAR BOUNDARIES
      CALL INNER(NBOD,JWAKE,KMAX,XB,YB,XNOSE,XTAIL,XGMX,YMAX,YMIN,
     1 DY1,JMAX,X,Y)
C
C     DISTRIBUTE POINTS ON BOTTOM-FRONT-TOP BOUNDARY
      CALL OUTER(XGMX,XGMN,YMAX,YMIN,XORG,YORG,ETAC,BETA,JMAX,KMAX,X,Y,
     *XRAMP)
```

```
                C                                                                 MAIN      56
                C       FILL-IN BETWEEN ETA-MAX AND ETA-MIN BOUNDARIES            MAIN      57
     60      34 JMM = JMAX -1                                                     MAIN      58
                KMM = KMAX-1                                                      MAIN      59
                RKMM=1.0/KMM                                                      MAIN      60
                C                                                                 MAIN      61
                DO 13 J=2,JMM                                                     MAIN      62
     65         DELX=(X(J,KMAX)-X(J,1))*RKMM                                      MAIN      63
                DELY=(Y(J,KMAX)-Y(J,1))*RKMM                                      MAIN      64
                C                                                                 MAIN      65
                DO 13 K=2,KMM                                                     MAIN      66
                X(J,K) = X(J,1) + (K-1)*DELX                                      MAIN      67
     70      13 Y(J,K) = Y(J,1) + (K-1)*DELY                                      MAIN      68
                C                                                                 MAIN      69
                C       PLOT INITIAL CONDITIONS                                   MAIN      70
                IF(IDSPLY .EQ. 1)CALL PLAWT(JMAX,KMAX,X,Y,XOMX,XOMN,YMAX,YMIN)    INLET78   16
                C                                                                 MAIN      72
     75         C       GENERATE UN-CLUSTERED GRID                                MAIN      73
                CALL RELAX(JMAX,KMAX,X,Y,OMEGA,MAXIT)                             MAIN      74
                C                                                                 MAIN      75
                C       PLOT UN-CLUSTERED GRID                                    MAIN      76
                IF(IDSPLY .EQ. 1)CALL PLAWT(JMAX,KMAX,X,Y,XOMX,XOMN,YMAX,YMIN)    INLET78   17
     80         C                                                                 MAIN      78
                C       APPLY EXPONENTIAL CLUSTERING                              MAIN      79
                CALL CLUSTR(JMAX,X,Y,DY2,KMAX)                                    MAIN      80
                C                                                                 MAIN      81
                C       PLOT EXPONENTIALLY CLUSTERED GRID                         MAIN      82
     85         IF(IDSPLY .EQ. 1)CALL PLAWT(JMAX,KMAX,X,Y,XOMX,XOMN,YMAX,YMIN)    INLET78   18
                C                                                                 MAIN      84
                C       WRITE FINAL SOLUTION                                      MAIN      85
                WRITE(8) ((X(J,K), J=1,JMAX), K=1,KMAX), ((Y(J,K), J=1,JMAX), K=1,KMAX) MAIN  86
                C.....  DISPLAY INNER AND OUTER BOUNDARIES USING J  MULLEN'S PRINTER PLOT INLET78  19
     90         IOPT=3                                                            INLET78   20
                IOPT=4                                                            INLET78   21
                LWID=100                                                          INLET78   22
                LENG=100                                                          INLET78   23
                NOP=140                                                           INLET78   24
     95         NC=4                                                              INLET78   25
                NP(1)=JMAX                                                        INLET78   26
                NP(2)=JMAX                                                        INLET78   27
                NP(3)=JMAX                                                        INLET78   28
                NP(4)=JMAX                                                        INLET78   29
    100         DO 40 J=1,JMAX                                                    INLET78   30
                XP(J,1)=X(J,1)                                                    INLET78   31
                YP(J,1)=Y(J,1)                                                    INLET78   32
                XP(J,2)=X(J,KMAX)                                                 INLET78   33
                YP(J,2)=Y(J,KMAX)                                                 INLET78   34
    105         XP(J,3)=X(J,5)                                                    INLET78   35
                YP(J,3)=Y(J,5)                                                    INLET78   36
                XP(J,4)=X(J,KMM)                                                  INLET78   37
                YP(J,4)=Y(J,KMM)                                                  INLET78   38
     40      CONTINUE                                                             INLET78   39
    110         CALL PLOTA2(XP,YP,IOPT,NP,NOP,NC,LWID,LENG)                       INLET78   40
                GO TO 555                                                         INLET78   41
                C.....  DISPLAY ALL GRID LINES                                    INLET78   42
                NC=JMAX/5+1                                                       INLET78   43
                N=0                                                               INLET78   44
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                      JMM3=67                                                    INLET78   45
                      DO 45 J=1,JMM3,6                                           INLET78   46
                      N=N+1                                                      INLET78   47
                45    NP(N)=KMAX                                                 INLET78   48
                      N=0                                                        INLET78   49
                      DO 50 J=1,JMM3,6                                           INLET78   50
                      N=N+1                                                      INLET78   51
                      DO 50 K=1,KMAX                                             INLET78   52
                      XP(K,N)=X(J,K)                                             INLET78   53
                50    YP(K,N)=Y(J,K)                                             INLET78   54
                      CALL PLOTA2(XP,YP,IOPT,NP,NDP,NC,LWID,LENG)                INLET78   55
                555   CONTINUE                                                   INLET78   56
                C                                                                MAIN      87
                C        PLOT BLOW-UP OF INNERMOST 10 LINES                      MAIN      88
                      NJW=JWAKE/4                                                MAIN      89
                      NJM=NBOD-2*NJW                                             MAIN      90
                      JJJ=JWAKE-NJW+1                                            MAIN      91
                      XMAX=X(JWAKE,1)                                            MAIN      92
                      XMIN=XMAX                                                  MAIN      93
                      YMAX=Y(JWAKE,1)                                            MAIN      94
                      YMIN=YMAX                                                  MAIN      95
                C                                                                MAIN      96
                      DO 35 K=1,10                                               MAIN      97
                      DO 3F J=1,NJM                                              MAIN      98
                      JJ=JJJ-J                                                   MAIN      99
                      XX=X(JJ,K)                                                 MAIN     100
                      YY=Y(JJ,K)                                                 MAIN     101
                      IF(XX GT XMAX)  XMAX=XX                                    MAIN     102
                      IF(XX LT XMIN)  XMIN=XX                                    MAIN     103
                      IF(YY GT YMAX)  YMAX=YY                                    MAIN     104
                      IF(YY LT YMIN)  YMIN=YY                                    MAIN     105
                      X(J,K)=XX                                                  MAIN     106
                35    Y(J,K)=YY                                                  MAIN     107
                C                                                                MAIN     108
                      IF(IDSPLY  EQ 1)CALL PLAWT(NJM,10,X,Y,XMAX,XMIN,YMAX,YMIN) INLET78   57
                      IF(IDSPLY  EQ  1)CALL EQFTV                                INLET78   58
                C                                                                MAIN     111
                      STOP                                                       MAIN     112
                C                                                                MAIN     113
                100   FORMAT(8A10)                                               MAIN     114
                101   FORMAT(16I5)                                               MAIN     115
                102   FORMAT(10 I0)                                              MAIN     116
                103   FORMAT(/27H AIRFOIL POINTS AS READ IN )                    MAIN     117
                104   FORMAT(3H N=,I3,5X,3HXB=,E12.5,5X,3HYB=,E12.5)             MAIN     118
                109   FORMAT(34H CARD NO. 9   AIRFOIL DESCRIPTION ,10X,8A10)     MAIN     119
                112   FORMAT(24H1 PARAMETERS AS READ IN //                       MAIN     120
                     1 60H CARD NO. 1.  JWAKE, NUMBER OF POINTS IN EACH SIDE OF WAKE =,  MAIN  121
                     2 I5/14X,41HKMAX, NUMBER OF POINTS IN ETA DIRECTION =,I5/   MAIN     122
                     3 14X,57HMAXIT, MAXIMUM NUMBER OF ITERATIONS IN MAKING UN-CLUSTERE,  MAIN  123
                     4 8HD GRID =,I5/                                            MAIN     124
                     5 57H CARD NO. 2.  XGMX, X-DIRECTION COORDINATE OF DOWNSTREAM ,  MAIN  125
                     6 10HBOUNDARY =,F20.10/14X,32HXGMN, X-DIRECTION COORDINATE OF ,  MAIN  126
                     7 19HUPSTREAM BOUNDARY =,F20.10/14X,25HYMAX, Y-DIRECTION COORDIN,  MAIN  127
                     8 23HATE OF UPPER BOUNDARY =,F20.10/14X,23HYMIN, Y-DIRECTION COORD,  MAIN  128
                     9 25HINATE OF LOWER BOUNDARY =,F20.10/14X,19HXNOSE, X-DIRECTION ,  MAIN  129
                     A 39HCOORDINATE OF LEADING EDGE OF AIRFOIL =,F20.10/14X,     MAIN     130
                     B 59HXTAIL, X-DIRECTION COORDINATE OF TRAILING EDGE OF AIRFOIL =,  MAIN  131
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      CF20.10/14X,4BHX-COORDINATE LOCATION OF LEADING EDGE OF RAMP =  .    INLET78    59
      DF20.10)                                                             INLET78    60
  113  FORMAT(51H CARD NO. 3:  DY1, MINIMUM Y-INCREMENT ON REARWARD .       MAIN      133
175   1 33HBOUNDARY FOR INITIAL CONDITIONS = ,F20.10/14H CARD NO. 4  .      MAIN      134
      2 61HXORG, X-DIRECTION LOCATION OF ORIGIN FOR ANGULAR CLUSTERING =.   MAIN      135
      3F20.10/14X,61HYORG, Y-DIRECTION LOCATION OF ORGIN FOR ANGULAR CLUS  INLET78    61
      *TERING = ,F20.10/14X,45HETAC, ANGLE (IN DEGREES) ABOUT WHICH ANGUL  INLET78    62
      *AR .                                                                INLET78    63
180   4 20HCLUSTERING IS DONE = ,F8.2/14X,25HBETA, ANGULAR CLUSTERING .    MAIN      137
      5 11HPARAMETER = ,F20.10/35H CARD NO. 5:  OMEGA, PARAMETER FOR .     MAIN      138
      6 17HTHOMPSON SOLVER = ,F20.10/31H CARD NO. 6:  DY2, MINIMUM ETA-.   MAIN      139
      7 40HDIRECTION SPACING FOR FINAL CLUSTERING = ,F20.10)               MAIN      140
  137  FORMAT(25H CARD NO. 8:  PLOT TITLE .10X,8A10)                        MAIN      141
185   C                                                                    MAIN      142
       END                                                                 MAIN      143
```

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      SUBROUTINE INNER(NBOD,JWAKE,XMAX,XB,YB,XNOSE,XTAIL,XGMX,YMAX,YMIN,    INNER     2
     1  DY1,JMAX,X,Y)                                                       INNER     3
C                                                                          INNER     4
CC       THIS SUBROUTINE DISTRIBUTES POINTS ON THE ETA-MIN (AIRFOIL-       INNER     5
CC       WAKE, INNER) BOUNDARY AND THE REAR (OUTFLOW) BOUNDARY             INNER     6
C                                                                          INNER     7
      DIMENSION XB(1),YB(1),X(140,80),Y(140,80)                            INNER     8
C                                                                          INNER     9
C        SHIFT AND SCALE AIRFOIL POINTS                                    INNER    10
      XMIN = XB(1)                                                         INNER    11
      XMAX = XB(1)                                                         INNER    12
      DO 3 N=2,NBOD                                                        INNER    13
      IF( XB(N)  LT  XMIN) XMIN = XB(N)                                    INNER    14
    3 IF( XB(N)  GT  XMAX) XMAX = XB(N)                                    INNER    15
C                                                                          INNER    16
      SCALE = (XTAIL-XNOSE)/( XMAX - XMIN)                                 INNER    17
      DO 4 N=1,NBOD                                                        INNER    18
      XB(N) = ( XB(N) - XMIN)*SCALE+XNOSE                                  INNER    19
    4 YB(N) = YB(N)*SCALE                                                  INNER    20
      WRITE(6,105)                                                         INNER    21
      WRITE(6,106)  (N,XB(N),YB(N),N=1,NBOD)                               INNER    22
C                                                                          INNER    23
      JWT = JWAKE + NBOD -1                                                INNER    24
      N = 0                                                                INNER    25
      DO 5 J = JWAKE,JWT                                                   INNER    26
      N = N +1                                                             INNER    27
      X(J,1) = XB(N)                                                       INNER    28
    5 Y(J,1) = YB(N)                                                       INNER    29
C     TEST FOR NO WAKE                                                     INLET78  64
      YY1=-YB(1)                                                           INLET78  65
      YY2=YB(NBOD)                                                         INLET78  66
      IF(JWAKE  EQ  1)GO TO 10                                             INLET78  67
C                                                                          INNER    30
C        DISTRIBUTE POINTS ON WAKE BOUNDARY                                INNER    31
      DX0 = (X(JWT,1) - X(JWT-1,1) +X(JWAKE,1) -X(JWAKE+1,1))* 5           INNER    32
      N = -1                                                               INNER    33
      JMAX = NBOD +2*JWAKE -2                                              INNER    34
      JWTP = JWT + 1                                                       INNER    35
      XX = ( X(JWT,1) + X(JWAKE,1))* 5                                     INNER    36
      YY = (Y(JWT,1) + Y(JWAKE,1))* 5                                      INNER    37
      EPSW=EPSIL(XGMX,XX,DX0,JMAX-JWT+1,0.001,100,2,1)                     INNER    38
C                                                                          INNER    39
      DO 6 J=JWTP,JMAX                                                     INNER    40
      N = N +1                                                             INNER    41
      JJ = JWAKE -1 -N                                                     INNER    42
      XX=XX+DX0*(1.0-EPSW/SQRT(FLOAT(N+1))**N                              INNER    43
      X(J,1) = XX                                                          INNER    44
      X(JJ,1) = XX                                                         INNER    45
      Y(J,1) = YY                                                          INNER    46
    6 Y(JJ,1) = YY                                                         INNER    47
      YY1=-YY                                                              INLET78  68
      YY2=YY                                                               INLET78  69
   10 CONTINUE                                                             INLET78  70
      JMAX=NBOD+2*JWAKE-2                                                  INLET78  71
      NONE=1                                                               INNER    48
      WRITE(6,107)                                                         INNER    49
      WRITE(6,108)  1,J,NONE,X(J,1),J,NONE,Y(J,1),J=1,JMAX)                INNER    50
```

```
      C                                                                 INNER     51
      C     DISTRIBUTE POINTS IN Y DIRECTION ON REARWARD BOUNDARY.      INNER     52
   60       N=1                                                         INNER     53
            YYMIN=-2.15                                                 INLET78   72
            BETAT=EPSIL(YMAX,YY2,DY1,KMAX,1.E-6,100,1,1)                INLET78   73
            BETAB=EPSIL(YYMIN,YY1,DY1,KMAX,1.E-6,100,1,1)               INLET78   74
      C                                                                 INNER     56
   65       DO 8 K=2,KMAX                                               INNER     57
            A1=0.5                                                      INLET78   75
            Z=(K-1.)/(KMAX-1.)                                          INLET78   76
            A2=-(Z-A1)/A1                                               INLET78   77
            Y(JMAX,K)=Y(JMAX,  1)+(YMAX-YY2)*(((BETAT+1.)-(BETAT-1.)*((BETAT+   INLET78   78
   70      <1.)/(BETAT-1.))**A2)/((2.*A1+1.)*(1.+((BETAT+1.)/(BETAT-1.))**A2))  INLET78   79
           <)                                                           INLET78   80
            Y(1,K)=Y(1,  1)+(YY1-YYMIN)     *(((BETAB+1.)-(BETAB-1.)*((BETAB+   INLET78   81
           <1.)/(BETAB-1.))**A2)/((2.*A1+1.)*(1.+((BETAB+1.)/(BETAB-1.))**A2))  INLET78   82
           <)                                                           INLET78   83
   75       X(JMAX,K)=XGMX                                              INNER     61
            X(JMAX,K)=XB(NBOD)                                          INLET78   84
      8     X(1,K)=XGMX                                                 INNER     62
      C                                                                 INNER     63
            WRITE(6,110)                                                INNER     64
   80       WRITE(6,108)  (NONE,K,X(1,K),NONE,K,Y(1,K),K=1,KMAX)        INNER     65
            WRITE(6,111)                                                INNER     66
            WRITE(6,108)  (JMAX,K,X(JMAX,K),JMAX,K,Y(JMAX,K),K=1,KMAX)  INNER     67
      C                                                                 INNER     68
            RETURN                                                      INNER     69
   85       C                                                           INNER     70
      105   FORMAT(/32H AIRFOIL POINTS AFTER RESCALING )                INNER     71
      106   FORMAT(3H N=,I3,5X,2HXB=,F12.5,5X,2HYB=,F12.5)              INNER     72
      107   FORMAT(/30H BOUNDARY ON WAKE AND AIRFOIL )                  INNER     73
      108   FORMAT(3H X(,I3,1H,,I3,2H)=,F12.5,5X,2HY(,I3,1H,,I3,2H)=,F12.5)  INNER   74
   90 110   FORMAT(/33H LOWER PART OF REARWARD BOUNDARY )               INNER     75
      111   FORMAT(/33H UPPER PART OF REARWARD BOUNDARY )               INNER     76
      C                                                                 INNER     77
            END                                                         INNER     78
```

```
      SUBROUTINE OUTER(XMAX,XMIN,YMAX,YMIN,XORG,YORG,ETAC,BETA,JMAX,KMAX INLET78   85
     +,X,Y,XRAMP)                                                        INLET78   86
C                                                                        OUTER     3
C     THIS SUBROUTINE PLACES POINTS ON BOTTOM-FRONT-TOP BOUNDARY IN      OUTER     4
C     ANGULAR FASHION                                                    OUTER     5
C                                                                        OUTER     6
      DIMENSION X(140,80),Y(140,80)                                      OUTER     7
C                                                                        OUTER     8
      LOGICAL CLUSTR                                                     OUTER     9
C                                                                        OUTER     10
      DATA PI/3.1415926547/                                              OUTER     11
C                                                                        OUTER     12
      SINH(X)=0.5*(EXP(X)-EXP(-X))                                       OUTER     13
C                                                                        OUTER     14
C.....TEST CASE FOR CREATING INLET GRID                                  INLET78   87
      ETARU=ATAN2(YMAX-YORG,X(JMAX,KMAX)-XORG)                           INLET78   88
      ETARL=ATAN2(YORG-Y(JMAX,KMAX),XMAX-XORG)                           INLET78   89
      DETA=(2.0*PI-(ETARU+ETARL))/(JMAX-1)                               OUTER     17
      DETA=.13522                                                        INLET78   90
      CLUSTR = .FALSE.                                                   OUTER     18
      IF(.NOT.CLUSTR) GO TO 14                                           OUTER     19
      FACT=PI/(2.0*PI-(ETARU+ETARL))                                     OUTER     20
      FACTR=1.0/FACT                                                     OUTER     21
      ETACT=(ETAC-ETARU)*FACT                                            OUTER     22
      BI=0.5*ALOG((1.+(EXP(BETA)-1.)*ETACT/PI)/(1.+(EXP(-BETA)-1.)*      OUTER     23
     1  ETACT/PI))                                                       OUTER     24
      RSB = 1./SINH(BI)                                                  OUTER     25
   14 ETA=ETARU                                                          OUTER     26
      ANG1=ATAN2(YMAX-YORG,XMIN-XORG)                                    INLET78   91
      ANG2=ATAN2(YMIN-YORG,XMIN-XORG)+2.0*PI                             INLET78   92
      ANG3=-ATAN2(XRAMP-XORG,YMIN-YORG)+.5*PI                            INLET78   93
      NSIDE = 1                                                          OUTER     28
C                                                                        OUTER     29
      ETARUD=ETARU*180./PI                                               OUTER     30
      ETARLD=ETARL*180./PI                                               OUTER     31
      ANG1D=ANG1*180./PI                                                 OUTER     32
      ANG2D=ANG2*180./PI                                                 OUTER     33
      WRITE(6,109) CLUSTR,ETARUD,ETARLD,ANG1D,ANG2D,XORG,YORG,ANG3D,     INLET78   94
     +ANG4D,ANG5D                                                        INLET78   95
      IF(CLUSTR.AND.ETAC.LT.ETARU.OR.CLUSTR.AND.ETAC.GT.(2.0*PI-ETARL))  OUTER     35
     1  GO TO 22                                                        OUTER     36
C                                                                        OUTER     37
      DO 9 JJ=2,JMAX                                                     OUTER     38
      J=JMAX+1-JJ                                                        OUTER     39
      ETA = ETA + DETA                                                   OUTER     40
      IF(.NOT.CLUSTR) GO TO 26                                           OUTER     41
      ETAT=(ETA-ETARU)*FACT                                              OUTER     42
      PHIT=ETACT*(SINH(BETA*ETAT/PI-BI)*RSB+1.)                          OUTER     43
      PHI=ETARU+PHIT*FACTR                                               OUTER     44
      GO TO 27                                                           OUTER     45
   26 PHI=ETA                                                            OUTER     46
C                                                                        OUTER     47
   27 CONTINUE                                                           INLET78   96
      ANG=270.*PI/180.-PHI                                               INLET78   97
      IF((PHI*180./PI).GT.270.)ANG=-PHI+270.*PI/180.                     INLET78   98
      GO TO(1,3,3,6),NSIDE                                               INLET78   99
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                1 IF(J .LT. 67)INSIDE=2                                          INLET78  100
                  GO TO 6                                                        INLET78  101
60          C                                                                    OUTER     54
                3 IF(J .LT. 50)INSIDE=4                                          INLET78  102
                6   GO TO(10,11,12,13),NSIDE                                     INLET78  103
               10 Y(J,KMAX) = YMAX                                               OUTER     56
                  X(J,KMAX)=(YMAX-YORG)/TAN(PHI)+XORG                            INLET78  104
65                X(67,KMAX)=4.9                                                 INLET78  105
                  X(68,KMAX)=6.4                                                 INLET78  106
                  X(69,KMAX)=8.3                                                 INLET78  107
                  GO TO 21                                                       OUTER     58
               11 X(J,KMAX) = XMIN                                               OUTER     59
70                Y(J,KMAX)=(XMIN-XORG)*TAN(PHI)+YORG                            INLET78  108
                  Y(50,KMAX)=.25                                                 INLET78  109
                  Y(51,KMAX)=.35                                                 INLET78  110
                  Y(52,KMAX)=.45                                                 INLET78  111
                  Y(53,KMAX)=.6                                                  INLET78  112
75                Y(54,KMAX)=.75                                                 INLET78  113
                  Y(55,KMAX)=1.                                                  INLET78  114
                  Y(56,KMAX)=1.25                                                INLET78  115
                  Y(57,KMAX)=1.5                                                 INLET78  116
                  Y(58,KMAX)=2.                                                  INLET78  117
80                Y(59,KMAX)=2.5                                                 INLET78  118
                  Y(60,KMAX)=3.                                                  INLET78  119
                  Y(61,KMAX)=4.                                                  INLET78  120
                  Y(62,KMAX)=5.                                                  INLET78  121
                  Y(63,KMAX)=6.                                                  INLET78  122
85                Y(64,KMAX)=7.5                                                 INLET78  123
                  Y(65,KMAX)=9.                                                  INLET78  124
                  Y(66,KMAX)=9.6                                                 INLET78  125
                  X(64,KMAX)=1.5                                                 INLET78  126
                  X(65,KMAX)=2.6                                                 INLET78  127
90                X(66,KMAX)=3.7                                                 INLET78  128
                  GO TO 21                                                       OUTER     61
                12  X(J,KMAX)=XORG+(YMIN-YORG)/TAN(PHI)                          INLET78  129
                  Y(J,KMAX)=YMIN                                                 OUTER     63
                  GO TO 21                                                       INLET78  130
95              13  CONTINUE                                                     INLET78  131
                  READ(5,100)X(J,KMAX),Y(J,KMAX)                                 INLET78  132
                100 FORMAT(2F10.5)                                               INLET78  133
                21  CONTINUE                                                     OUTER     64
                C                                                                OUTER     65
100               ETAD=ETA*180./PI                                               OUTER     66
                  PHID=PHI*180./PI                                               OUTER     67
                  WRITE(6,113)  J,KMAX,X(J,KMAX),J,KMAX,Y(J,KMAX),ETAD,PHID,NSIDE OUTER     68
                9 CONTINUE                                                       OUTER     69
                C                                                                OUTER     70
105               RETURN                                                         OUTER     71
                C                                                                OUTER     72
                22  WRITE(6,114)                                                 OUTER     73
                  STOP                                                           OUTER     74
                C                                                                OUTER     75
110             109 FORMAT(/8H CLUSTR=,L1,5X,6HETARU=,F8.2,5X,6HETARL=,F8.2,5X,  OUTER     76
                1 5HANG1=,F8.2,5X,5HANG2=,F8.2,5X,7HXORGIN=,F8.5,5X,7HYORGIN=,F8.5/ INLET78  134
                  <5X,5HANG3=,F8.2,5X,5HANG4=,F8.2,5X,5HANG5=,F8.2//             INLET78  135
                  <24H OUTER BOUNDARY ON TOP,                                    INLET78  136
                  2 18HFRONT, AND BOTTOM )                                       OUTER     78
```

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115          113  FORMAT(3H X(,I3,1H,,I3,2H)=,F12.5,5X,2HY(,I3,1H,,I3,2H)=,F12.5,     OUTER      79
            1  5X,4HETA=,F8.2,5X,4HPHI=,F8.2,5X,6HNSIDE=,I1)                          OUTER      80
             114  FORMAT(/23H ERROR EXIT   BAD ETAC )                                 OUTER      81
             C                                                                        OUTER      82
                  END                                                                 OUTER      83
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```
      SUBROUTINE RELAX(JMAX,KMAX,X,Y,OMEGA,MAXIT)                       RELAX      2
C                                                                       RELAX      3
C     THIS SUBROUTINE SOLVES BY SLOR THE DIFFERENTIAL EQUATIONS         RELAX      4
C     THAT CONSTITUTE THOMPSON-THAMES-MASTIN S METHOD OF GENERATING     RELAX      5
C     GRIDS.                                                            RELAX      6
C                                                                       RELAX      7
      DIMENSION X(140,80),Y(140,80)                                     RELAX      8
      DIMENSION A(140),B(140),C(140),D(140),F(140),G(140)               RELAX      9
C                                                                       RELAX     10
      KMM=KMAX-1                                                        RELAX     11
      JMM=JMAX-1                                                        RELAX     12
      ICOUNT=0                                                          RELAX     13
C                                                                       RELAX     14
    2 ICOUNT=ICOUNT+1                                                   RELAX     15
      RSUM=0                                                            RELAX     16
C                                                                       RELAX     17
      DO 1 K=2,KMM                                                      RELAX     18
C                                                                       RELAX     19
      DO 3 J=2,JMM                                                      RELAX     20
      XXD=(X(J+1,K)-X(J-1,K))*0.5                                       RELAX     21
      XED=(X(J,K+1)-X(J,K-1))*0.5                                       RELAX     22
      YXD=(Y(J+1,K)-Y(J-1,K))*0.5                                       RELAX     23
      YED=(Y(J,K+1)-Y(J,K-1))*0.5                                       RELAX     24
      AD=XED**2+YED**2                                                  RELAX     25
      BD=XXD*XED+YXD*YED                                                RELAX     26
      GD=XXD**2+YXD**2                                                  RELAX     27
      XXED=(X(J+1,K+1)-X(J+1,K-1)-X(J-1,K+1)+X(J-1,K-1))*0.25           RELAX     28
      YXED=(Y(J+1,K+1)-Y(J+1,K-1)-Y(J-1,K+1)+Y(J-1,K-1))*0.25           RELAX     29
      BD=-2.0*BD                                                        RELAX     30
      A(J)=AD                                                           RELAX     31
      B(J)=-AD-AD-GD-GD                                                 RELAX     32
      C(J)=AD                                                           RELAX     33
      F(J)=-BD*XXED-GD*(X(J,K+1)+X(J,K-1))                              RELAX     34
    3 G(J)=-BD*YXED-GD*(Y(J,K+1)+Y(J,K-1))                              RELAX     35
C                                                                       RELAX     36
      F(2)=F(2)-A(2)*X(1,K)                                             RELAX     37
      G(2)=G(2)-A(2)*Y(1,K)                                             RELAX     38
      F(JMM)=F(JMM)-C(JMM)*X(JMAX,K)                                    RELAX     39
      G(JMM)=G(JMM)-C(JMM)*Y(JMAX,K)                                    RELAX     40
C                                                                       RELAX     41
      CALL TRIBIA(B,C,D,F,2,JMM)                                        RELAX     42
      CALL TRIBIA(B,C,D,G,2,JMM)                                        RELAX     43
C                                                                       RELAX     44
      DO 4 J=2,JMM                                                      RELAX     45
      XC=OMEGA*(F(J)-X(J,K))                                            RELAX     46
      YC=OMEGA*(G(J)-Y(J,K))                                            RELAX     47
      RSUM=RSUM+ABS(XC)+ABS(YC)                                         RELAX     48
      X(J,K)=X(J,K)+XC                                                  RELAX     49
    4 Y(J,K)=Y(J,K)+YC                                                  RELAX     50
    1 CONTINUE                                                          RELAX     51
C                                                                       RELAX     52
      WRITE(6,100)RSUM,ICOUNT                                           RELAX     53
      IF(ICOUNT.LT.MAXIT) GO TO 2                                       RELAX     54
C                                                                       RELAX     55
      WRITE(6,121)                                                      RELAX     56
      DO 24 J=1,JMAX,10                                                 RELAX     57
      WRITE(6,115)J                                                     RELAX     58
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```
                WRITE(6,117) (X(J,K),K=1,KMAX)                                  RELAX   59
                WRITE(6,116)J                                                   RELAX   60
60        24    WRITE(6,117) (Y(J,K),K=1,KMAX)                                  RELAX   61
              C                                                                 RELAX   62
                RETURN                                                          RELAX   63
              C                                                                 RELAX   64
          100   FORMAT(20H SUM OF RESIDUALS = ,F20.10,                          RELAX   65
65              1 7H AFTER ,I5,12H ITERATIONS )                                 RELAX   66
          115   FORMAT(/31H X'S FOR CONSTANT XI LINE AT J=,I5)                  RELAX   67
          116   FORMAT(/31H Y'S FOR CONSTANT XI LINE AT J=,I5)                  RELAX   68
          117   FORMAT(10E13.6)                                                 RELAX   69
          121   FORMAT(/48H AFTER THOMPSON-SOLVER, BEFORE FINAL CLUSTERING )    RELAX   70
70              END                                                             RELAX   71
```

```
      SUBROUTINE CLUSTR(JJ,X,Y,DD,KK)                                   INLET78  137
C                                                                       CLUSTR     3
C        THIS SUBROUTINE APPLIES THE EXPONENTIAL CLUSTERING             CLUSTR     4
C        TO THE LINES OF CONSTANT XI                                    CLUSTR     5
C                                                                       CLUSTR     6
      DIMENSION X(140,80),Y(140,80)                                     CLUSTR     7
      DIMENSION T(80),S(80),XXX(80),YYY(80)                             CLUSTR     8
C                                                                       CLUSTR     9
      A1=0.5                                                            INLET78  138
      JMAX=JJ                                                           INLET78  139
      KMAX=KK                                                           INLET78  140
      DY2=DD                                                            INLET78  141
      KMM = KMAX-1                                                      CLUSTR    11
C                                                                       CLUSTR    12
      DO 20 J=1,JMAX                                                    CLUSTR    13
C                                                                       CLUSTR    14
      T(1) = 0.                                                         CLUSTR    15
      DO 16 K=2,KMAX                                                    CLUSTR    16
   16 T(K) = T(K-1) + SQRT( ( X(J,K) -X(J,K-1))**2 +( Y(J,K)-Y(J,K-1))  CLUSTR    17
     1  **2)                                                           CLUSTR    18
C                                                                       CLUSTR    19
      BETA2=EPSIL(T(KMAX),0.0,DY2,KMAX,1.E-6,100,1,J)                   INLET78  142
C                                                                       CLUSTR    21
      S(1)=0.0                                                          CLUSTR    22
      N=-1                                                              CLUSTR    23
      DO 15 K=2,KMAX                                                    CLUSTR    24
      Z=(K-1.)/(KMAX-1.)                                                INLET78  143
      A2=-(Z-A1)/A1                                                     INLET78  144
   15 S(K)=S(K-1)+(T(KMAX)-T(1))*(((BETA2+1.)**(BETA2-1.))-((BETA2+1.)/  INLET78  145
     *((BETA2-1.)**A2))/((2.*A1+1.)*(1.-((BETA2+1.)/(BETA2-1.))**A2)))  INLET78  146
C                                                                       CLUSTR    27
      DO 17 K=1,KMAX                                                    CLUSTR    28
      XXX(K) = X(J,K)                                                   CLUSTR    29
   17 YYY(K) = Y(J,K)                                                   CLUSTR    30
C                                                                       CLUSTR    31
      PTL = 0.                                                          CLUSTR    32
      DO 18 K=2,KMM                                                     CLUSTR    33
   18 CALL TAINT(T,XXX,S(K),X(J,K),KMAX,2,NER,PTL)                      CLUSTR    34
C                                                                       CLUSTR    35
      PTL  = 0.                                                         CLUSTR    36
      DO 19 K=2,KMM                                                     CLUSTR    37
   19 CALL TAINT(T,YYY,S(K),Y(J,K),KMAX,2,NER,PTL)                      CLUSTR    38
C                                                                       CLUSTR    39
   20 CONTINUE                                                          CLUSTR    40
C                                                                       CLUSTR    41
      WRITE(6,120)                                                      CLUSTR    42
      DO 23 J=1,JMAX                                                    CLUSTR    43
      WRITE(6,115)J                                                     CLUSTR    44
      WRITE(6,117)  (X(J,K),K=1,KMAX)                                   CLUSTR    45
      WRITE(6,116)J                                                     CLUSTR    46
   23 WRITE(6,117)  (Y(J,K),K=1,KMAX)                                   CLUSTR    47
      RETURN                                                            CLUSTR    48
C                                                                       CLUSTR    49
  120 FORMAT(/24H AFTER FINAL CLUSTERING./)                             CLUSTR    50
  115 FORMAT(/31H X'S FOR CONSTANT XI LINE AT J=,I5)                    CLUSTR    51
  116 FORMAT(/31H Y'S FOR CONSTANT XI LINE AT J=,I5)                    CLUSTR    52
  117 FORMAT(10E13.6)                                                   CLUSTR    53
C                                                                       CLUSTR    54
      END                                                               CLUSTR    55
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FUNCTION EPSIL      76/76   OPT=2 TRACE                FTN 4.6=460        01/10/80  14.12.48        PAGE     1

                      FUNCTION EPSIL(FMX,FMIN,DFM,NPT,FPCC,ICC,KEY,NCALL)                                EPSIL      2
                C                                                                                        EPSIL      3
                C        THIS SUBROUTINE APPLIES A NEWTON-RAPHSON ROOT-FINDING                           EPSIL      4
                C        TECHNIQUE TO FIND A VALUE OF EPSILON FOR A PARTICULAR USE                       EPSIL      5
                C        OF THE EXPONENTIAL STRECHING TRANSFORMATION                                     EPSIL      6
                C                                                                                        EPSIL      7
                      DIMENSION R(1401                                                                   EPSIL      8
                C                                                                                        EPSIL      9
                      F(A)=(A+1.)=(A-1.)**((A+1.)/(A-1.))**A2                                            INLET78  147
                      G(A)=(1.+((A+1.)/(A-1.))**A2)*2 *A1+1.)                                            INLET78  148
                      FP(A)=1.-((A+1.)/(A-1.))**A2-A2*(A-1.)*(-2./(A-1.)**2)*((A+1.)/(A-                 INLET78  149
                     <1.))**A3                                                                           INLET78  150
                      GP(A)=A2*(2 *A1+1.)*(-2./(A-1.)**2)*((A+1.)/(A-1.))**A3                            INLET78  151
                      FMXL=FMX                                                                           EPSIL      10
                      FMINL=FMIN                                                                         EPSIL      11
                      DFML=DFM                                                                           EPSIL      12
                      FPCCL=FPCC                                                                         EPSIL      13
                      ICCL=ICC                                                                           EPSIL      14
                      C=1.0                                                                              INLET78  152
                      A1=0.5                                                                             INLET78  153
                      SMAX=FMX-FMIN                                                                      INLET78  154
                      ETADC=DFM                                                                          INLET78  155
                      COSMAX=C/SMAX                                                                      INLET78  156
                      Z1=1./(NPT-1.)                                                                     INLET78  157
                      CONST1=ETADC*COSMAX                                                                INLET78  158
                      A2=-(Z1-A1)/A1                                                                     INLET78  159
                      A3=-Z1/A1                                                                          INLET78  160
                      BNEW=1.01                                                                          INLET78  161
                C                                                                                        EPSIL      15
                      GO TO (1,2),KEY                                                                    EPSIL      16
                C                                                                                        EPSIL      17
                1     FNPTM2=NPT-2.                                                                      EPSIL      18
                      IF(NCALL .EQ. 1)BNEW=1.005                                                         INLET78  162
                      IF(NCALL .EQ. 1)BNEW=1.0001                                                        INLET78  163
                      IF(NCALL .EQ. 1)BNEW=1.01                                                          INLET78  164
                C                                                                                        EPSIL      20
                      DO 3 NIT=1,ICCL                                                                    EPSIL      21
                      BETA=BNEW                                                                          INLET78  165
                      F1=CONST1-F(BETA)/G(BETA)                                                          INLET78  166
                      FP1=1.-G(BETA)*FP(BETA)-F(BETA)*GP(BETA))/G(BETA)**2                               INLET78  167
                      BNEW=BETA-F1/FP1                                                                   INLET78  168
                      IF(ABS(BNEW-BETA) .LE. FPCCL)GO TO 4                                               INLET78  169
                3     CONTINUE                                                                           EPSIL      31
                      GO TO 5                                                                            EPSIL      32
                C                                                                                        EPSIL      33
                2     NPTM=NPT-1                                                                         EPSIL      34
                      IF(NCALL.EQ.1)                                                                     EPSIL      35
                     1  EPS=((FMXL/DFML)**(1.0/(NPT-2))-1.0)*SQRT(FLOAT(NPTM))                         EPSIL      36
                      DO 6 L=1,NPTM                                                                      EPSIL      37
                6     R(L)=1.0/SQRT(FLOAT(L))                                                            EPSIL      38
                C                                                                                        EPSIL      39
                      DO 7 NIT=1,ICCL                                                                    EPSIL      40
                      SUM1=0.0                                                                           EPSIL      41
                      SUM2=0.0                                                                           EPSIL      42
                      DO 8 L=1,NPTM                                                                      EPSIL      43
                      FLM2=L-2.                                                                          EPSIL      44
                      FACT=1.0+EPS*R(L)                                                                  EPSIL      45
```

```
                FACT2=FACT1**FLM2                                          EPSIL    46
                SUM1=SUM1+FACT2*FACT1                                      EPSIL    47
60        6     SUM2=SUM2+(L-1)*FACT2*RIL1                                 EPSIL    48
                F2=FMXL-FMINL-DFML*SUM1                                    INLET7B  170
                IF(ABS(F2) .LT. FPCOL)GO TO 4                              INLET7B  171
                FPN=DFML*SUM2                                              EPSIL    51
                EPS=EPS+F2/FPN                                             INLET7B  172
65        7     CONTINUE                                                   EPSIL    53
              C                                                            EPSIL    54
              5 EPSIL=BNEW                                                 INLET7B  173
                WRITE(6,100)                                               EPSIL    56
                RETURN                                                     EPSIL    57
70            C                                                            EPSIL    58
              4 EPSIL=BNEW                                                 INLET7B  174
                WRITE(6,101)EPSIL,F1,NIT                                   INLET7B  175
                RETURN                                                     EPSIL    61
              C                                                            EPSIL    62
75        100 FORMAT(/42H EXCEEDED MAX. NO. OF ITERATIONS IN EPSIL.)       EPSIL    63
          101 FORMAT(/7H EPSIL=,F12.5,5X,7H AN/ F=,F12.5,5X,7H AFTER ,I3,  EPSIL    64
             *  12H ITERATIONS.)                                           EPSIL    65
              C                                                            EPSIL    66
                END                                                        EPSIL    67
```

```
      SUBROUTINE TAINT(XTAB,FTAB,X,FX,N,K,NER, MON)                    TAINT      2
C                                                                      TAINT      3
C        SYSTEM LIBRARY SUBROUTINE TAINT FOR POLYNOMIAL INTERPOLATION  TAINT      4
C        OF A TABULATED FUNCTION                                       TAINT      5
C                                                                      TAINT      6
      DIMENSION XTAB(1),FTAB(1),T(10),C(10)                            TAINT      7
CPS0400  TAINT SUBROUTINE- IN FORTRAN II                               TAINT      8
      IF (N - K) 1,1,2                                                 TAINT      9
    1 NER=2                                                            TAINT     10
      RETURN                                                           TAINT     11
    2 IF (K-9) 3,3,1                                                   TAINT     12
    3 IF ( MON) 4,4,5                                                  TAINT     13
    5 IF ( MON-2) 6,7,4                                                TAINT     14
    4 J=0                                                              TAINT     15
      NM1=N-1                                                          TAINT     16
      DO 8 I=1,NM1                                                     TAINT     17
      IF (XTAB(I)-XTAB(I+1)) 9,11,10                                   TAINT     18
   11 NER=3                                                            TAINT     19
      RETURN                                                           TAINT     20
    9 J=J-1                                                            TAINT     21
      GO TO 8                                                          TAINT     22
   10 J=J+1                                                            TAINT     23
    8 CONTINUE                                                         TAINT     24
      MON=1                                                            TAINT     25
      IF (J) 12,6,6                                                    TAINT     26
   12 MON=2                                                            TAINT     27
    7 DO 13 I=1,N                                                      TAINT     28
      IF (X-XTAB(I)) 14,14,13                                          TAINT     29
   14 J=I                                                              TAINT     30
      GO TO 18                                                         TAINT     31
   13 CONTINUE                                                         TAINT     32
      GO TO 15                                                         TAINT     33
    6 DO 16 I=1,N                                                      TAINT     34
      IF (X-XTAB(I)) 16,17,17                                          TAINT     35
   17 J=I                                                              TAINT     36
      GO TO 18                                                         TAINT     37
   16 CONTINUE                                                         TAINT     38
   15 J=N                                                              TAINT     39
   18 J=J-(K+1)/2                                                      TAINT     40
      IF (J) 19,19,20                                                  TAINT     41
   19 J=1                                                              TAINT     42
   20 M=J+K                                                            TAINT     43
      IF (M-N) 21,21,22                                                TAINT     44
   22 J=J-1                                                            TAINT     45
      GO TO 20                                                         TAINT     46
   21 KP1=K+1                                                          TAINT     47
      JSAVE=J                                                          TAINT     48
   26 DO 23 L=1,KP1                                                    TAINT     49
      C(L)=X-XTAB(J)                                                   TAINT     50
      T(L)=FTAB(J)                                                     TAINT     51
   23 J=J+1                                                            TAINT     52
      DO 24 J=1,K                                                      TAINT     53
      I=J+1                                                            TAINT     54
   25 T(I)=(C(J)*T(I)-C(I)*T(J))/(C(J)-C(I))                           TAINT     55
      I=I+1                                                            TAINT     56
      IF (I-KP1) 25,25 ,24                                             TAINT     57
   24 CONTINUE                                                         TAINT     58
```

```
                FX=TIKP(1)                                          TAINT     59
                NER=1                                               TAINT     60
60              RETURN                                              TAINT     61
                END                                                 TAINT     62
```

```
      SUBROUTINE TRIB(A,B,C,X,F,NL,NU)                                  TRIB     2
      DIMENSION A(2),B(2),C(2),X(2),F(2)                                TRIB     3
C                                                                       TRIB     4
C     THIS SUBROUTINE SOLVES A TRI-DIAGONAL SYSTEM OF LINEAR            TRIB     5
C     EQUATIONS                                                         TRIB     6
C                                                                       TRIB     7
      X(NL)=C(NL)/B(NL)                                                 TRIB     8
      F(NL)=F(NL)/B(NL)                                                 TRIB     9
      NLP1 = NL +1                                                      TRIB    10
      DO 1 J=NLP1,NU                                                    TRIB    11
      Z=1./(B(J)-A(J)*X(J-1))                                           TRIB    12
      X(J)=C(J)*Z                                                       TRIB    13
    1 F(J)=(F(J)-A(J)*F(J-1))*Z                                         TRIB    14
      NUPNL=NU+NL                                                       TRIB    15
      DO 2 J1=NLP1,NU                                                   TRIB    16
      J=NUPNL-J1                                                        TRIB    17
    2 F(J)=F(J)-X(J)*F(J+1)                                             TRIB    18
      RETURN                                                            TRIB    19
      END                                                               TRIB    20
```

```
      SUBROUTINE PLAVT(N,M,X,Y,XMAX,XMIN,YMAX,YMIN)                     PLAVT     2
C                                                                       PLAVT     3
C        THIS SUBROUTINE IS ONE OF THE SUBROUTINES THAT PLOTS GRIDS     PLAVT     4
C        ON THE SC4020 PLOTTER                                          PLAVT     5
C                                                                       PLAVT     6
      DIMENSION X(140,80),Y(140,80),XX(80),YY(80)                       PLAVT     7
      COMMON/TCOM/ITITLE(8)                                             PLAVT     8
C                                                                       PLAVT     9
C        READJUST PLOT LIMITS SO AS TO AVOID A STRECHED PLOT            PLAVT    10
      XDIF=XMAX-XMIN                                                    PLAVT    11
      YDIF=YMAX-YMIN                                                    PLAVT    12
      IF(XDIF.LT.YDIF) GO TO 4                                          PLAVT    13
      XDIFH=XDIF*0.5                                                    PLAVT    14
      YMID=(YMAX+YMIN)*0.5                                              PLAVT    15
      YMX=YMID+YDIFH                                                    PLAVT    16
      YMN=YMID-XDIFH                                                    PLAVT    17
      XMX=XMAX                                                          PLAVT    18
      XMN=XMIN                                                          PLAVT    19
      GO TO 5                                                           PLAVT    20
    4 YDIFH=YDIF*0.5                                                    PLAVT    21
      XMID=(XMAX+XMIN)*0.5                                              PLAVT    22
      XMX=XMID+YDIFH                                                    PLAVT    23
      XMN=XMID-YDIFH                                                    PLAVT    24
      YMX=YMAX                                                          PLAVT    25
      YMN=YMIN                                                          PLAVT    26
    5 CONTINUE                                                          PLAVT    27
C                                                                       PLAVT    28
C        PLOT THE LINES                                                 PLAVT    29
      CALL AXIS(XMN,XMX,YMN,YMX,0.,0.)                                  PLAVT    30
      CALL TITLE(ITITLE,80)                                             PLAVT    31
      DO1J=1,M                                                          PLAVT    32
    1 CALL PLOT(X(1,J),Y(1,J),N,0)                                      PLAVT    33
      DO2I=1,N                                                          PLAVT    34
      DO3J=1,M                                                          PLAVT    35
      XX(J)=X(I,J)                                                      PLAVT    36
    3 YY(J)=Y(I,J)                                                      PLAVT    37
    2 CALL PLOT(XX,YY,M,0)                                              PLAVT    38
      RETURN                                                            PLAVT    39
      END                                                               PLAVT    40
```

```
SUBROUTINE AXIS      76/76  OPT=2 TRACE              FTN 4.6-460      01/10/80 14.12.48      PAGE  1

      1                    SUBROUTINE AXIS(XMIN,XMAX,YMIN,YMAX,NXINTS,NYINTS)                    AXIS    2
                     C                                                                          AXIS    3
                     C       THIS SUBROUTINE IS ONE OF THOSE THAT PLOTS GRIDS                   AXIS    4
                     C       ON THE SC4020 PLOTTER                                              AXIS    5
      5              C                                                                          AXIS    6
                     C     THIS SUBROUTINE DRAWS THE X AND Y AXES, MARKS OFF THE                AXIS    7
                     C     INTERVALS, SETS THE SCALE VALUES, AND MOVES THE FILM TO A NEW        AXIS    8
                     C     FRAME                                                                AXIS    9
                     C                                                                          AXIS   10
     10              C     XMIN IS THE MINIMUM VALUE OF THE X (HORIZONTAL) VARIABLE             AXIS   11
                     C     XMAX IS THE MAXIMUM VALUE OF THE X VARIABLE                          AXIS   12
                     C     YMIN IS THE MINIMUM VALUE OF THE Y (VERTICAL) VARIABLE               AXIS   13
                     C     YMAX IS THE MAXIMUM VALUE OF THE Y VARIABLE                          AXIS   14
                     C     NXINTS IS THE NUMBER OF INTERVALS INTO WHICH THE X AXIS IS TO        AXIS   15
     15              C          BE DIVIDED                                                      AXIS   16
                     C     NYINTS IS THE NUMBER OF INTERVALS INTO WHICH THE Y AXIS IS TO        AXIS   17
                     C          BE DIVIDED                                                      AXIS   18
                     C                                                                          AXIS   19
                     C     DO INITIALIZATION                                                    AXIS   20
     20                    CALL CAMRAV(35)                                                      AXIS   21
                           CALL SMALLV                                                          AXIS   22
                           CALL FRAMEV(0)                                                       AXIS   23
                           NX=NXINTS                                                            AXIS   24
                           NY=NYINTS                                                            AXIS   25
     25              L     IF NX OR NY  LE  0 MAKE THEM EQUAL TO 1                              AXIS   26
                           IF(NX  LE  0) NX=1                                                   AXIS   27
                           IF(NY  LE  0) NY=1                                                   AXIS   28
                     C     SET UP VALUES TO BE USED FOR MARGINS                                 AXIS   29
                           ML=123                                                               AXIS   30
     30                    MR=923                                                               AXIS   31
                           MB=123                                                               AXIS   32
                           MT=923                                                               AXIS   33
                     C     DRAW X AXIS                                                          AXIS   34
                           CALL LINEV(ML,MB,MR,MB)                                              AXIS   35
     35              C     DRAW Y AXIS                                                          AXIS   36
                           CALL LINEV(ML,MB,ML,MT)                                              AXIS   37
                     C     DETERMINE INCREMENTS FOR TIC MARKS                                   AXIS   38
                           DX=(XMAX-XMIN)/NX                                                    AXIS   39
                           DY=(YMAX-YMIN)/NY                                                    AXIS   40
     40              C     SCALE X AND Y VALUES                                                 AXIS   41
                           CALL XSCALV(XMIN,XMAX,ML,100)                                        AXIS   42
                           CALL YSCALV(YMIN,YMAX,MB,100)                                        AXIS   43
                     C     DRAW TIC MARKS ON THE X AXIS                                         AXIS   44
                           CALL LINRV(1,MB-20,MB-5,MB+5,XMIN,XMAX,DX,0,-1,-3,8)                AXIS   45
     45              C     DRAW TIC MARKS ON Y AXIS                                             AXIS   46
                           CALL LINRV(2,ML- 90,ML-5,ML+5,YMIN,YMAX,DY,0,-1,-3,10)               AXIS   47
                           RETURN                                                               AXIS   48
                           END                                                                  AXIS   49
```

```
      SUBROUTINE LABEL(IXLABL,NX,IYLABL,NY)                              LABEL    2
C                                                                        LABEL    3
C        THIS SUBROUTINE IS ONE OF THOSE THAT PLOTS GRIDS                LABEL    4
C        ON THE SC4020 PLOTTER                                           LABEL    5
C                                                                        LABEL    6
C     THE MAXIMUM NUMBER OF CHARACTERS ALLOWED FOR THE X LABEL IS 54.    LABEL    7
C     THE MAXIMUM NUMBER OF CHARACTERS ALLOWED FOR THE Y LABEL IS 38.    LABEL    8
      INX=IABS(NX)                                                       LABEL    9
      INY=IABS(NY)                                                       LABEL   10
      IF (INX .GT. 54) INX=54                                            LABEL   11
      IF (INY .GT. 38) INY=38                                            LABEL   12
      IX=500-(INX/2)*18                                                  LABEL   13
      IY=510+(INY/2)*26                                                  LABEL   14
C     LABEL THE X AXIS                                                   LABEL   15
      CALL WRITE2V(IX,60,1000,90,1,INX,1,IXLABL,NLAST)                   LABEL   16
C     LABEL THE Y AXIS                                                   LABEL   17
      DO 100 I=1,INY                                                     LABEL   18
           ITEMP=IY-26*(I-1)                                             LABEL   19
           CALL WRITE2V(10,ITEMP,50,90,1,1,1,IYLABL, NLAST)              LABEL   20
  100 CONTINUE                                                           LABEL   21
      RETURN                                                             LABEL   22
      END                                                                LABEL   23
```

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```
SUBROUTINE PLOT      76/76   OPT=2 TRACE                FTN 4.6+460      01/10/80  14.12.48      PAGE  1

1                    SUBROUTINE PLOT(X,Y,NBR,NSYM)                                                PLOT      2
                C                                                                                 PLOT      3
                C       THIS SUBROUTINE IS ONE OF THOSE THAT PLOTS GRIDS                          PLOT      4
                C       ON THE SC4020 PLOTTER                                                     PLOT      5
5               C                                                                                 PLOT      6
                     DIMENSION X(1),Y(1),MARKPT(5)                                                PLOT      7
                     DATA MARKPT /42,16,55,38,44/                                                 PLOT      8
                C    SYMBOLS ARE, IN ORDER     * X O +                                           PLOT      9
                     IF (NSYM .GT. 0 .AND. NSYM .LE. 5) GO TO 100                                 PLOT     10
10                   J=IABS(NBR)-1                                                                PLOT     11
                     DO 110 I=1,J                                                                 PLOT     12
                          CALL LINEV( IXV(X(I)), IYV(Y(I)), IXV(X(I+1)),IYV(Y(I+1)) )             PLOT     13
                 110 CONTINUE                                                                     PLOT     14
                     RETURN                                                                       PLOT     15
15               100 CALL APLOTV(NBR,X,Y,1,1,1,MARKPT(NSYM))                                      PLOT     16
                     RETURN                                                                       PLOT     17
                     END                                                                          PLOT     18
```

```
      SUBROUTINE TITLE(ITITLE,NCHARS)                                   TITLE     2
C                                                                       TITLE     3
C        THIS SUBROUTINE IS ONE OF THOSE THAT PLOTS GRIDS               TITLE     4
C        ON THE SC4020 PLOTTER.                                         TITLE     5
C                                                                       TITLE     6
C     THE MAXIMUM NUMBER OF CHARACTERS ALLOWED IN THE TITLE IS 108.     TITLE     7
C                                                                       TITLE     8
      ICHARS=IABS(NCHARS)                                               TITLE     9
      IF (ICHARS .GT. 108) ICHARS=108                                   TITLE    10
      IF (ICHARS .GT. 54) IX=14                                         TITLE    11
      IF (ICHARS .LE. 54) IX=510-(ICHARS/2)*18                          TITLE    12
      IY=930                                                            TITLE    13
      CALL RITE2V(IX,IY,1010,90,1,ICHARS,1,ITITLE,NLAST)                TITLE    14
      RETURN                                                            TITLE    15
      END                                                               TITLE    16
```

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Final Report

16. Abstract

The use of a computer code for the calculation of 2-D inlet flow fields in a supersonic free stream and a nonorthogonal mesh-generation code are illustrated by specific examples. Input, output and program operation and use are given and explained for the case of supercritical inlet operation at a subdesign Mach number ($M_\infty = 2.09$) for an isentropic-compression, drooped-cowl inlet. Source listings of the computer codes are also provided.

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